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RADIATION AND THE TUBERCULOSIS CHEST X-RAY EXAMINATION PROGRAM

REPORT OF THE COMMITTEE ON RADIATION,
MEDICAL SECTION, ONTARIO TUBERCULOSIS
ASSOCIATION*

IN VIEW of the misunderstandings which followed certain statements in the press and over the radio and television on the effects of radiation in connection with tuberculosis chest x-ray examination programs, the Medical Section, Ontario Tuberculosis Association, early in 1957 authorized the formation of a special committee on radiation to study the problem and present a report with recommendations. This committee, consisting of qualified representatives in the fields of radiation and public health, held nine meetings exploring all aspects of the situation. An important contribution to the study was made by H. E. Johns, M.A., Ph.D., Head of the Department of Physics, Ontario Cancer Institute, and Professor of Physics, University of Toronto, who conducted an investigation on the amount of radiation received from six miniature film x-ray units. The following is the report of the Committee.

The discovery of x-rays in 1895 marked a milestone in medical progress, opening up a new approach to diagnosis and a better understanding of many pathological conditions. Over the years their use has contributed in no small measure to greatly improved diagnostic standards, thereby benefiting the human race. There is every reason to believe that the medical use of x-rays has been a significant factor in prolonging the average life span over the past half-century.

The value of chest x-ray examination was early recognized in attacking the tuberculosis problem. It soon became one of the most important and dependable diagnostic procedures in the diagnosis and treatment of chest diseases. Without this aid, progress in the control of tuberculosis would have fallen far short of what it is today. It therefore

can be said with certainty that chest x-ray examination is indispensable in an effective tuberculosis preventive program.

Because of the insidious nature of the disease, the great problem always has been the reservoir of unsuspected infectious tuberculosis in the general population. When efficient miniature film x-ray equipment became generally available in the 1940s, it became possible to attack the problem of tuberculosis in the general population by using this equipment for chest x-ray surveys of the general community. This new approach was introduced on a community basis in Ontario in 1946, and since that time has been the means of removing from the population a tremendous pool of infectious cases. From 1946 to 1957, a total of 3228 new cases of active pulmonary tuberculosis including pleurisy with effusion were discovered through the medium of mass surveys. It is of significance to note that approximately 60% of these cases were found in the minimal stage. The conclusion that can be drawn from this is that this procedure has been the means not only of reducing the spread of infection but also of increasing by a large margin the chances of recovery because of early diagnosis.

The simplified operation of the miniature film x-ray machine and low cost of producing chest films made it possible to introduce special programs for chest x-ray examination of groups in which tuberculosis was known to be a significant problem. These include patients admitted to hospital, prisoners in jails, individuals in receipt of public assistance, residents in homes for the aged, and bush camp workers. What has been said about community mass surveys is applicable to a greater extent to these special groups.

With the introduction of the atomic era, it was but natural that scientists should become concerned with the possible effects of an increase in radiation on the population as a whole. Up to that time, no special attention had been given to radiation as it might affect the general population. Apart from medical diagnostic and treatment x-ray procedures, the human race has always been subjected to unavoidable radiation called background radiation. This is produced from cosmic rays coming from outer space, naturally occurring radio-

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active substances in rock, radioactive K^{40} and C^{14} in the human body. It is estimated that over a 30-year period an individual receives from natural background a dose of 3 r to the gonads. This amount is often used as a reference level for comparative purposes when considering radiation from other sources.

The question arose what the effect might be if an unknown load of radiation was added to the population through the development of nuclear energy for weapons and industrial use. It therefore became apparent to scientists that all sources of radiation should be investigated, including that from x-ray procedures.

There can be no question that radiation has a harmful effect in large doses. The question arises what effects, if any, result from very small doses such as are received from chest x-ray examinations. Experiments which have been limited to lower animals, and the results of human experience with large doses of radiation, indicate that definite deleterious effects do occur. It has not been possible, however, to demonstrate similar effects of small doses at intervals such as are received from chest x-ray examinations. By extrapolation from observations of exposures at much higher dose levels, scientists speculate that effects might be expressed in the human population in proportion to the size of the dose.

As atomic energy is one of the greatest advancements in knowledge since the beginning of human life, with tremendous possibilities for good or ill to the human race, mankind has been obligated to accept this new force and develop it. The International Commission on Radiological Protection and other authoritative bodies have suggested certain maximum permissible radiation dose levels for workers involved in radiation. These are considered to be reasonably safe for small groups of workers, as regards somatic injury to the individual worker. Considering all available evidence, no significant radiation effects have been demonstrated in animals or humans at or below maximum permissible dose levels. For the population as a whole, these levels are considered too high, particularly from the genetic standpoint. As applied to the general population, considerably lower exposure levels have been recommended in order to provide a safety factor.

Measurements made by Dr. Johns with improved x-ray techniques have shown that the average individual gonadal dose from the lens-type miniature film x-ray unit was reduced from previous dose levels by a factor of six, i.e., to 0.1 milliroentgen for the male and 2.0 milliroentgens for the female. Since emphasis has been placed on the genetic effects of radiation as a problem of the human race, it is important to know what the mass survey program in Ontario is contributing to the radiation load on the gonads of the population up to age thirty. Doses are computed over

a 30-year period because this carries the average individual up to the mid-productive period, and so represents approximately the average genetic dose.

The U.S. National Academy of Sciences has suggested a gonadal cumulative dose of 10 roentgens, excluding background radiation, over the first 30 years of life per individual in a general population as a reasonable upper limit for practical purposes. The average annual dose for both sexes on the basis of current mass x-ray survey operations in Ontario for one year represents 0.26 milliroentgen per individual of the population below age 30. One miniature film exposure therefore represents less than 1/25,000th of the 30-year cumulative dose. The 14×17 inch film chest radiograph gives a dose of even smaller magnitude. Over the 30-year period the mass chest x-ray program contributes 30×0.26 mr, which equals 7.8 mr or 0.07% of the 10-roentgen upper limit suggested by the National Academy of Sciences. It is apparent that the gonadal dose from miniature film x-ray procedures conducted in a proper manner is extremely small and can be considered radiologically insignificant.

No one can deny the need for care in the use of sources of radiation, including x-ray machines. Every effort should be made to eliminate unnecessary exposure as much as practicable. The Department of Health, Province of Ontario, has recognized this obligation by taking steps to eliminate all unnecessary radiation from miniature film x-ray units in use in the province. A special cone adapter was designed which confines the x-ray beam to the area of the screen, and a special hinged convex insert installed at the lower border of the cone aperture which can be used for reducing the radiation area for short-chested individuals. Proper aluminum filters for eliminating the soft rays have also been provided.

The recent introduction of new fast film also has resulted in a 50% reduction in the time of exposure. These innovations, together with mirror-type camera installations now coming into use, reduce the direct radiation dose to the skin and the gonadal dose to an extremely small amount. Under these conditions, it is of interest to note that the dose to the gonads from one miniature film chest x-ray examination is less than that received from a luminous-dial wrist watch in one year.

In order further to reduce the dose to the general population from tuberculosis case-finding programs, it is recognized that any alternative procedure to x-ray examination should be used if practicable. Since tuberculin testing is of proven value in tuberculosis case-finding, it is suggested that whenever possible the younger age groups in the population be screened by the tuberculin test, only reactors to the test being x-rayed.

It is known from animal experiments that the mammalian embryo is very radiosensitive; it is therefore desirable that pregnant women should

be protected from x-ray radiation as much as possible. In this group, it is recommended that routine chest films be limited to the 14 × 17 inch film in lieu of miniature films, and that this procedure be conducted early in pregnancy with all possible protection to the pelvis. More use also, might be made of tuberculin testing in this group as a screening procedure.

While great progress has been made in the control of tuberculosis, this disease continues to be a major public health problem. After reviewing the situation, the committee is unanimous in the opinion that the properly controlled chest x-ray examination procedure continues to be an important part of the over-all tuberculosis preventive program, and recommends that it be continued.

The magnitude of any possible deleterious effects is believed to be less than that due to many other physical and chemical health hazards to which we are exposed daily. Every human action is associated with an accepted hazard, otherwise life on this planet would not be possible. We are fully convinced that the benefits from properly controlled chest x-ray examination programs far outweigh any possible harmful effects.

CONCLUSIONS

Chest x-ray examination is an indispensable procedure in the diagnosis and treatment of chest diseases.

Mass surveys have been the means of protecting large numbers of people from becoming infected and developing active clinical tuberculous disease.

It is recognized that every effort should be made to eliminate unnecessary irradiation.

Modern chest x-ray techniques can reduce the radiation dose to an extremely low level.

All mass survey x-ray machines in Ontario have been properly equipped to eliminate unnecessary

radiation. By the end of June 1958, all miniature film x-ray units in chest clinic centres and general hospitals in the province will have been similarly serviced.

The tuberculin test is of benefit as a screening procedure for certain groups by indicating the presence or absence of tuberculous infection.

As a general policy, and in the absence of specific reasons, it would appear that routine chest x-ray examination is seldom indicated more often than once in every two years. Justifiable reasons for more frequent examination would include:

Screening of older age groups, chest disease, known tuberculosis contact, known tuberculous disease, recent conversion of tuberculin reaction, unduly high group incidence of tuberculosis, and certain occupational hazards.

The benefits from properly conducted chest x-ray examination programs, including mass surveys, far outweigh any possible slight harm associated with x-ray exposure.

Since tuberculosis continues to be a major public health problem, chest x-ray examination programs should be continued.

RÉSUMÉ

Les phthisiologues de l'Ontario s'élèvent contre les accusations portées contre les radiographies en série employées dans le dépistage de la tuberculose. Ils considèrent ce moyen diagnostique comme un facteur essentiel dans l'élimination du réservoir d'infection qui se cache au sein de la population. Les progrès rapides dans le contrôle de cette maladie coïncident avec l'introduction en 1946 des films en miniature. La dose génétique émise au cours de ces examens représente 0.26 mr par année par personne âgée de moins de 30 ans ou 1/25,000 de la dose cumulative permise par l'Académie nationale des sciences des Etats-Unis. En dépit de cette quantité de rayonnement infime des précautions particulières sont prises à l'égard des enfants et des femmes enceintes et la tendance actuelle est de n'exiger la radiographie que chez les personnes à cutiréaction positive. Les risques d'ailleurs fort minimes méritent d'être courus en raison du danger très réel de la tuberculose dans notre pays.

ARE DIAGNOSTIC X-RAY EXAMINATIONS DANGEROUS?

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THE POSSIBLE HAZARDS of the medical use of x-rays have come very much into public attention in the last couple of years as a result of recent scientific publications and a host of popular articles based upon them. In March 1955, the British government requested the Medical Research Council to appoint an independent committee to report on the medical aspects of nuclear radiation, including the genetic aspects. A large committee was set up, comprising outstanding representatives of many fields of science. This group presented its first report in June 1956.¹ In the United States at about

the same time the National Academy of Sciences-National Research Council produced a report covering the same field.² These books are available to the public, and hundreds of popular interpretations have since appeared in magazines and newspapers. In addition, many relevant scientific articles have subsequently been published in medical and other journals. The material embodied in this paper is the result of a study of many of these communications. This is not a field in which an individual in clinical practice can claim to have any certain scientific knowledge from his own experience. However, what is stated here is drawn from a careful study of all the available sources, and the information is based on the facts as they are known, or as they are believed to exist by the majority of those in the best position to have opinions on the subject. As we all know, the

whole subject of the biological effects of radiation is one in which knowledge is still somewhat limited. Whenever any more or less dogmatic statement appears, one must realize that it is based upon certain assumptions which may require some revision in the light of future experience. Nevertheless, it should be emphasized that radiation is one of the best understood environmental hazards. The long-term results upon the human race of smoke, insecticides, food colouring, automobile exhaust fumes, food preservatives, and drugs, all represent environmental hazards which so far have been less well studied. The future may well show them to be of comparable importance to man-made radiation, or even greater.

The possible hazards of diagnostic x-rays may be considered from three points of view: the hazard to the patient, to the x-ray worker, and to the population as a whole, i.e. the racial or genetic hazard. There is little to be gained by adopting a scornful attitude and dismissing the whole problem as of no importance. We must be prepared to look at the matter objectively and, if necessary, to admit that there is some room for improvement in our practices regarding x-ray protection, without becoming cranks on the subject and contributing to public alarm. It has been known since very soon after Roentgen's discovery in 1895 that x-rays are potentially harmful, and a tragic toll of damage and death was taken during the early years. Gradually, with increasing knowledge and better equipment, the dangers have been continuously lessened. Better education and training of radiologists and technicians has helped to promote safe practices, and safety precautions have been continuously under review for years. Trained radiologists and technicians have always been aware of the necessity for careful practice, and a continuous series of improvements has been under way for many years in most departments. The engagement of large numbers of people in nuclear industry during World War II in connection with the Manhattan project provided an opportunity for study of large numbers of occupationally exposed persons, and demanded the codification of rules of safety, which have been useful in the medical field as well. Much valuable information has been derived from study of the Japanese A-bomb victims and of many who have since accidentally received considerable radiation exposures, such as the Marshall Islanders.

Let us first discuss the hazards to workers with radiation. In the medical field this involves radiologists, x-ray technicians, and a few workers with radio-isotopes. For many years the exposure of such persons has been limited in accordance with the recommendations of the International Commission on Radiation Protection. Studies of this group suggested that there was a certain low level of radiation which could be accepted by an individual without producing any observable effect upon him

during his lifetime. This is the foundation of the concept of the tolerance dose. The size of this tolerance dose has been gradually reduced over the years as knowledge has advanced. In 1928 it was recommended that no individual worker receive over 100 roentgens per year. In 1936 this was reduced to 36 roentgens per year. In 1947 it was further cut to 15 roentgens per year, or 300 milliroentgens per week. At the present time emphasis is shifting from exposure of the individual to exposure of the race, and further reductions in the occupational exposure are now recommended.³⁻⁵ It is now suggested that the whole-body or gonadal dose should not exceed 100 milliroentgens per week or 5 roentgens per year. It must be admitted, however, that the higher exposures of the years since 1928 have caused no detectable damage. The level of 300 milliroentgens per week which has been in vogue in x-ray departments for the last decade has caused no skin changes, alterations in blood count, sterility, or other obvious abnormalities. It has been quite easy in medical x-ray departments to operate well below this tolerance level. In our own department routine monitoring is done continuously, and no individual has ever approached the tolerance dose. Practically everyone is consistently in the so-called negligible exposure range of less than 20 milliroentgens a week. There is no question of any detectable change in the individual due to such small exposures. There are, however, believed to be two effects on the individual which are dependent upon very small doses, and to which the concept of a tolerance dose is not applicable. These are the so-called life-shortening effect, and the induction of leukæmia. Life-shortening is a rather difficult effect to define and measure, and can only be assessed by study of large groups. Some authorities believe that there is a tendency for earlier degeneration and senescence among those exposed to long-term, low levels of radiation. The National Academy of Sciences-National Research Council report shows that the average age at death of radiologists in the United States was 60.5 years, five years lower than that of physicians having no known contact with radiation. Of course, most of those who have died started their careers in radiology in an earlier day when the hazard was not well appreciated. The report suggests that the average accumulated whole-body exposure of these men may have been about 1000 roentgens. As a matter of fact, some authorities believe that it may well have been much larger, possibly 3000 to 4000 roentgens.⁶ The present recommendation of 100 milliroentgens per week would mean that during 40 years of working life a person who received the full "tolerance" dose would get only 200 roentgens. Actually no careful radiologist or technician receives nearly this amount. It is quite possible to operate at an exposure level which is on the average

less than one-fifth of this amount, thus giving a lifetime dose of less than 40 roentgens. If the life-shortening effect is proportional to the relation between this figure and 1000 roentgens, as it is thought to be, it would be negligible. The statistical evidence of the shorter lives of radiologists is open to considerable question in any case. It is well known that many physically handicapped physicians in the past have entered radiology. Among my own acquaintances are a number who have entered this specialty following the development of cardiac disease, multiple sclerosis, or tuberculosis. Naturally, the life expectancy of these people would be below the average for all physicians.

Much better established than this rather vague life-shortening effect are the facts about the development of leukæmia.^{1, 2, 7, 8} It has been known for some years that leukæmia occurs about ten times as frequently among radiologists as among other medical practitioners. Studies of the incidence of leukæmia among survivors of the Hiroshima and Nagasaki explosions, in patients treated by radiation for ankylosing spondylitis, and in the offspring of mothers who had pelvimetry during pregnancy, all tend to confirm the impression that radiation increases the probability of leukæmia. The latest studies indicate that there is a linear relationship between the amount of radiation and the frequency of leukæmia, i.e. there is no threshold for this effect: any amount of radiation causes a slight increase in the small probability of any individual's contracting leukæmia. The same considerations apply to this risk as we have just discussed under life-shortening, i.e. today's risk is much less because exposures are much lower. The probability of leukæmia has been calculated as 2×10^{-6} per unit of absorbed dose of radiation per year for any individual (correct within a factor of 3). At the dose rate being received in our x-ray department at present, this means that an individual takes about a one in a million additional chance of getting leukæmia in any given year. Such a minute increase in the probability of acquiring something very rare should be no deterrent to us in the pursuit of our profession. There is a small risk of failing to survive if one crosses Main Street. If this risk were doubled, we would still go across the street for lunch, since the danger remains negligibly small. We are accustomed to accepting many hazards in our modern life. The relation of cigarette-smoking and lung cancer, for instance, has much more statistical backing than any adverse effect of low-level radiation. It appears that about one in 20 long-time heavy smokers will die of lung cancer. But people go on smoking, inverting the statistics in their minds to read that 19 out of 20 will *not* die of lung cancer. This hazard is obviously hundreds of times greater than anything that any of us are exposed to occupationally.

We now turn to a discussion of the possible dangers to *patients* in diagnostic radiology. This is a subject about which all of us should be informed, and about which we should be prepared to give informed, factual reassurance to our patients. Numerous popular books and articles on the subject have resulted in many patients becoming greatly alarmed.⁹ Some of the public discussion has left the impression that all medical x-ray examinations are harmful. It has failed to distinguish between the population which is sick and the population which is well, and has also failed to distinguish between the recommended maximum average exposure for the entire population and the possible exposure of individuals. Patients have appeared quite frequently, in a state of great alarm. One husband was almost hysterical about his pregnant wife having a single chest x-ray examination. One elderly male was very disturbed when required to have a kidney, ureter and bladder film. One woman almost got out of hand, not only resisting her own examination but also telling one of the technicians that "These things can kill you. You will die young!" First of all, we can reassure our patients that there is absolutely no risk of any perceptible damage. There is no danger of skin changes, anæmia, loss of hair, or sterility. Some of the modern procedures in angiocardiology require prolonged fluoroscopy and multiple film exposures, and safe tolerance limits may be approached in some of these cases. This hazard must then be considered along with possible benefits to the patients. Most of them are in a special category, since many will not long survive without the treatment which the diagnostic procedure is designed to facilitate. They represent a carefully selected group, small in numbers. For the usual types of examination, such as are performed in most hospitals and private x-ray departments, one may confidently state that there is no danger to the individual. One may neglect the small hazards of leukæmia and aging, since they will be of the same negligible order as those discussed earlier for x-ray workers. When weighed against the sum total of benefits derived from quicker and more accurate diagnoses, they are certainly of no importance. At this point one should say a word about sterility. There seems to be a popular conception that relatively small doses of x-rays are sterilizing. This is quite erroneous. The local gonadal dose to produce permanent sterility is approximately 500 roentgens for males, and 300 roentgens for females. The *total body* lethal dose of x-rays is between 400 and 600 roentgens, and about 50% of persons who received such a dose would die. Any who survived such a dose would be permanently sterile, but a total body dose equal to about half of this, i.e. of the order of 200 roentgens, has no permanent effect on human fertility. It would cause temporary sterility, followed by a slow return to normal. Such a dose

is many times anything conceivable in diagnostic radiology, and is several times the accumulated lifetime dose of a careful radiologist or technician.

All that has been said so far applies to damage that may be done to an individual patient or worker, damage which will lead to some deleterious effect on the person himself. Of much more concern to many scientists (and to many of the public, thanks to popular articles) are the genetic effects.^{1, 2, 10-12}

These are effects which appear only in the descendants of the exposed person. They are caused by changes in the genes. The genes are aggregates of submicroscopic particles found in the chromosomes of the body cells, and these determine the hereditary nature of the individual. There are believed to be thousands, or possibly tens of thousands, of these tiny particles of genetic material distributed in a linear way along the chromosomes. The genes are distributed along the chromosome in a definite order, and the position or locus of the genes affecting any specific characteristic is the same in each chromosome of a pair. The two genes which occupy these corresponding positions on the two chromosomes of a pair are spoken of as alleles of each other. One of them is derived from each parent. The characteristic determined by the genes will remain constant through many generations unless a change occurs by the process of mutation. When mutation occurs, altered alleles are thereafter faithfully reproduced for many succeeding generations. Some genes produce the same effect whether they are paired with like or with unlike alleles. Such genes and the characters they determine are described as dominant. Other genes produce a noticeable effect only when paired with a similar allele. These and the characters they determine are described as recessive. There are many intermediate gradations between these two extremes. A recessive gene can be transmitted in a family by an individual who gives no sign of carrying it.

A very low rate of spontaneous mutation or change occurs in all genes. External factors which influence mutation apparently affect only the frequency with which it occurs. This is the important effect of radiation, i.e. it increases the *frequency* of gene mutation. There is no evidence that entirely different kinds of genes may be produced by radiation. The rise in the mutation rate is believed to be directly proportional to the amount of additional exposure to radiation which occurs. This means that any additional exposure, no matter how small, may raise the mutation rate possibly only by a minute amount. Mutations occurring in somatic cells are, of course, of no significance to future generations, and affect only the individual in whom the mutation occurs. However, damage to genetic material is cumulative and irreparable, and is passed on to the descendants of the affected individual. Long-continued exposure to radiation of very low intensity induces as much gene mutation as a single exposure to an equal dosage of radiation of higher intensity. These considerations

are, of course, only important when the irradiated individual subsequently has children. There are no genetic consequences of the irradiation of individuals beyond the age of reproduction. For statistical purposes, it has been said that one need not be much concerned about gonadal doses to women over 30 and to men over 35, since the majority of children are born to parents below these ages. However, to be well on the safe side, measures of gonadal protection should be used, where practicable, up to the age of 40.

Current views on the genetic consequences of radiation may be summarized as follows:

1. Radiation causes mutations. Mutations occurring in the germ cells affect those hereditary traits which a person passes on to his children and to subsequent generations.

2. Any radiation dose, however small, can induce some mutation. There is no minimum amount of radiation dose which must be exceeded before any harmful mutations occur.

3. For every living thing, including bacteria, fruit flies, plants, mice, and men, there exist mutations which arise from natural causes, for instance, cosmic rays, radium in the earth, heat, and certain chemicals. These naturally occurring and unavoidable mutations are usually called spontaneous mutations. Natural background radiation is believed to cause about 50% of the normally occurring congenital abnormalities in human offspring.

4. Nearly all spontaneous mutations with detectable effects are harmful. These mutations tend to eliminate themselves from the population very quickly when the abnormality is severe, since there may be no offspring or low fertility or short life-expectancy, and much more slowly when the abnormality they have caused is minimal. Every individual has a supply of these spontaneous mutant genes. The number of mutant genes represents a balance between the tendency of these genes to eliminate themselves, and the addition of new mutants, which are constantly being produced through natural causes.

5. Additional radiation over and above the irreducible minimum due to natural causes produces additional mutations. The number of additional mutations is proportional to the extra radiation received by the reproductive organs where the germ cells are formed and stored. Large doses of radiation are believed to produce more, but not worse, mutants.

6. It is obvious, therefore, from the above that the important consideration from the genetic viewpoint is the total cumulative dose to the reproductive cells of the individual from the beginning of his life up to the time a child is conceived.

The genetic risk seems pretty small when carefully and mathematically examined. The experts, reasoning from the data obtained on mice, fruit flies, and the Japanese bomb victims, with many gaps in knowledge bridged by assumptions, have

calculated the human doubling dose to be somewhere between 30 and 80 roentgens, say 50 roentgens.^{1, 2} This means that if the entire population were subjected to a dose of this order between the time of conception and the end of their reproductive years, the number of mutations due to radiation would be doubled. This would mean that over a period of many generations the percentage of abnormalities due to radiation mutations would rise from the present estimate of 2% of all births to 4%. It is difficult to imagine this prospect alarming many people. For one thing, 50 roentgens, as we have seen, is a large dose. Even our occupationally exposed personnel, which are a very small fraction of the total population, do not receive this amount of radiation during their reproductive years. For levels of radiation up to this doubling dose and even somewhat beyond, the genetic effects of radiation are only appreciable when reckoned over the population as a whole, and need not cause any alarm to the individual on his own account. Since there are many naturally occurring hereditary abnormalities, the added effects due to radiation would not cause any noticeable or obvious effect on the immediate offspring of the exposed person, or on their descendants even over several centuries. The British committee considers that an individual can accept a total gonadal dose of up to 50 roentgens from conception to age 30, additional to natural background, without undue concern for himself or his offspring, but the number of such exposed individuals should not exceed one-fiftieth of the population as a whole. The National Academy of Sciences has recommended that the average pre-reproductive dose for the entire population be not over 10 roentgens. If it is correct that 50 roentgens constitutes a doubling dose, then a population which had been exposed to 10 roentgens every generation for many centuries (long enough to come to equilibrium) would have an increase of ten-fiftieths or 20% in genetic damage. At present about 2% of births have some genetic defect. A 20% increase would raise this to 2.4%. The incidence of abnormalities in a single generation due to 10 roentgens is calculated at 0.04% of all births. Surely there is little cause for public alarm in these figures. Admittedly, all such estimates depend on a number of unverifiable, but reasonable, assumptions, based on human data where available, but necessarily dependent largely on studies of mice and *Drosophila*. One can only guess how comparable these are to man. But unless human genes are grossly more mutable than those of mice (and all human evidence, such as that on the Japanese bomb victims, is against this), the genetic consequences of 10 roentgens for one generation would be small relative to other causes of death and disease, including spontaneous mutations. Hence this level of 10 roentgens has been recommended by the National Academy of Sciences—National Research Council as the maxi-

mum average dose for the entire population from conception to the age of 30. At the present time in North America the population gets about 3 to 4 roentgens on the average from medical and dental x-ray examinations, an amount about equal to the natural unavoidable background radiation. It is estimated that about half of a roentgen is being received because of weapons testing. It may in the near future become obligatory to accept a certain amount of radiation because of atomic power plants. All of these sources of radiation must be kept under surveillance in order that the total exposure may be kept within reasonable limits. I believe that all that is required of medical radiology is that we continue to exercise caution and make sure that all of us are applying the safety measures which are at present known. The past two generations which have seen the rise of medical radiology have also seen the greatest advances in public health in all time. Life expectancy has increased remarkably, mortality rates have gone down, the birth rate has gone up, the height and weight of succeeding generations has increased, and undoubtedly the general health of the population is better than it ever was. It is inconceivable that all these improvements could have occurred if medical radiation was at the same time insidiously undermining our heredity.

To return to our original question, "Are diagnostic x-ray examinations dangerous?", the answer is no. This is not a thundering and unintelligent denial, but an honest, factual assessment of the problem, and is dependent upon our acceptance of all the practicable precautionary measures which may be taken.¹³ In view of the fact that our knowledge is admittedly inexact, and *particularly so that we may reassure the apprehensive public*, we must take every reasonable step to see that our techniques are such as to give no more exposure than necessary, particularly to the gonads in the first 35 or 40 years of life. Some of these measures have been in vogue for many years. Others are new. All should be applied by all users of medical x-rays at once. Some of these measures are:

1. The use of added filtration.¹⁴ All fluoroscopic and radiographic tubes should have 2 or 3 mm. of aluminium filter added. This cuts the patient's skin dose in half or less, reduces the depth dose, and has negligible effects on the finished radiograph. A comparable reduction in exposure can be made with dental x-ray machines by adding 1 mm. of aluminium filter.
2. Cones and diaphragms. The radiation beam should be limited strictly to the area in question, keeping the volume of irradiated tissue as small as is consistent with diagnostic adequacy.
3. The use of higher kilovoltages. A given photographic effect may be attained with much lower patient dosage when high kV techniques are used. Most modern equipment permits the use of kilovoltages much higher than have been standard

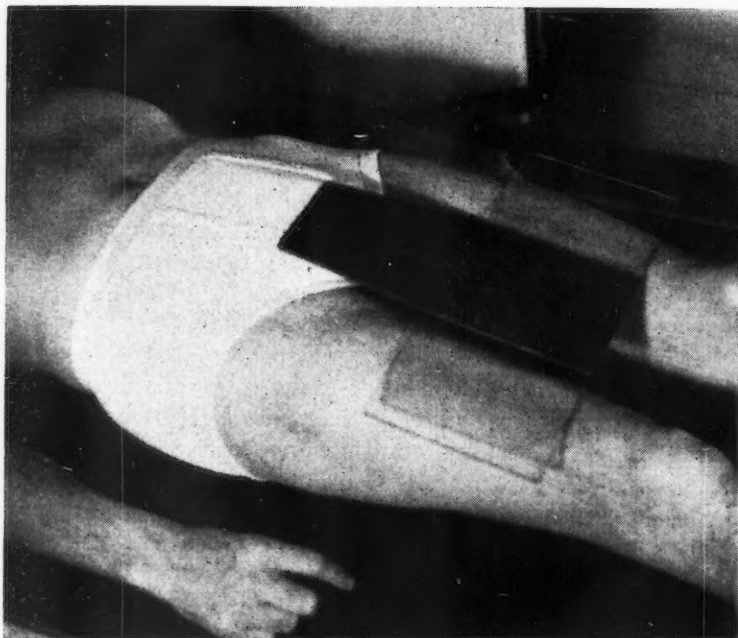


Fig. 1.—Position of Ardran lead gonad shield during radiography.

practice in the past. It is rather paradoxical that the largest patient doses are given by the lowest powered equipment.

4. Restricted fluoroscopy. Fluoroscopy is one of the procedures which result in a considerable dose to the patient, and most physicians probably fail to realize the magnitude of the dose. Some general practitioners, internists, and paediatricians are fond of using fluoroscopy for a general check-over of their patients, often without getting their vision sufficiently dark-adapted to benefit much from it, unless they use excessive currents and consequently high dose rates. Fluoroscopy of the chest for a brief two minutes gives the patient as much radiation as the taking of approximately 50 full-size x-ray films. Postero-anterior, lateral, and both oblique films of the chest could be taken for a small fraction of the exposure given by a fluoroscopic examination, even if done quickly. Sometimes, of course, the fluoroscopic information is important and must be obtained, and certainly the gonadal dose from chest exposure is not great.¹⁵⁻¹⁷ Nevertheless, one should not lightly order fluoroscopic examination as a routine procedure when the increased dose is of this magnitude. It is indefensible to use fluoroscopy more or less routinely in examining infants and children. In most cases the children are getting total body irradiation and relatively high gonadal doses. Fluoroscopic procedures for the treatment of fractures are hazardous both to the patient and to the operator, and should be abandoned. Rapid filming methods are available for this, and are in many respects superior. Fluoroscopy is necessary in some procedures, for instance in gastro-intestinal radiology, but if one is conscious of the need for care, it is possible to keep the total exposure time down to two or three minutes, and to further reduce the exposure by using small fields and low currents, or image amplifiers.

5. Abbreviated examination of children. Some children are exposed to the possibility of a relatively high gonadal dose when having frequent radiography over the pelvic area, as in cases of Legg-Perthes' disease and congenital dislocations. In these conditions, multiple long-term follow-up examinations are usually required. In the male, the gonads can be protected from direct exposure by a lead shield. In all cases one should do as few films as are necessary. Once the initial complete diagnostic examination has been done, it is usually adequate for routine follow-up to take a single A.P. view for comparison.

6. Shielding of the male gonads (under the age of 40). The greatest contribution to the genetic hazard comes from a relatively few examinations where the gonads are in the direct beam of radiation. These include examinations of the pelvis, hips, pyelograms, lower spine, and thigh. The gonadal dose from these procedures can be cut to one-tenth, or even to one-hundredth or less, merely by using a lead shield. This can be done very quietly and unobtrusively, without any comment which might alarm the patient, using the lead shield as described by Ardran¹⁸ (see Figs. 1, 2 and 3). Ardran and Crooks demonstrated a gonadal dose reduction of 80 to 95% by this means.



Fig. 2.—Appearance of lead shield on gastro-intestinal follow-up radiograph.

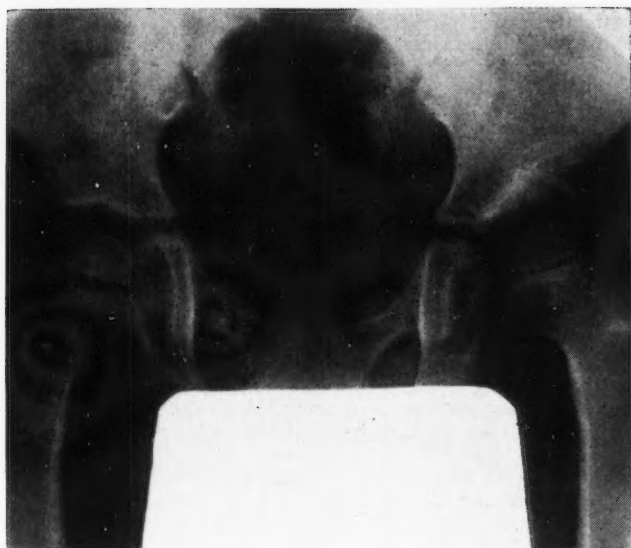


Fig. 3.—Appearance of lead shield on radiograph of child's hip.

7. Restriction of x-ray examination in pregnancy.^{19, 20} Radiation in pregnancy involves the exposure of two individuals. In the early stages of pregnancy direct damage may be done to the embryo, causing gross congenital defects which may be of immediate importance. At any stage of pregnancy one is contributing to the gonadal exposure of both the mother and the child. Such examinations should be done only when necessary, and should be done by good technicians, using high kilovoltage equipment and as few films as possible.

8. Mass surveys. It is likely that we will soon see the abandonment of so-called "mass survey" x-ray examinations of large, healthy population groups. The miniature films of the patient's chest used in these procedures are actually black and white photographs taken rapidly of a fluorescent image on a fluoroscopic screen. In order to produce an image of sufficient brightness to be readily photographed, relatively high energies must be used. The result is that a patient having a miniature film of his chest receives somewhere between 10 and 50 times the x-ray dosage which he would receive from a routine, full-sized film. By using the most advanced type of optics in the camera, and the highest available film speeds, it is possible to reduce this difference to about five times that of routine radiography, but even this is considerable in view of the fact that the end result, though useful as a screening procedure, is definitely inferior for most diagnostic purposes. From the genetic point of view there is the same statistical amount of damage to future generations when one roentgen of exposure is given to 100,000 people as there is from 100 roentgens given to 1000 people. In view of the fact that the yield of pathological findings in such surveys is admittedly very low, this hazard to the general population can no longer be justified. A very much higher percentage of abnormalities is found by confining the surveys to

groups where there are likely to be more abnormalities. These include the routine general hospital admission x-ray examinations, surveys of nurses and other hospital employees, and routine examinations of transient workers.

9. Films, screens, chemicals. X-ray exposures can be considerably reduced by using the fastest available films and fluorescent screens, and active chemicals. All of these measures should be utilized wherever possible.

10. Good technique. All x-ray examinations should be done carefully and accurately by well-trained technicians under adequate radiological supervision.

The gradually increasing utilization of x-rays in medicine will not cause a greater radiation dose to the population than is currently being received if all the above measures are taken.

SUMMARY AND CONCLUSIONS

The answer to the question "Are diagnostic x-ray examinations dangerous?" is "No". Roentgen diagnosis entails only a minute hazard, a risk so small as to be negligible in comparison with the benefits derived. By using meticulous care and the best equipment and techniques, it is easily possible to keep medical radiation at a level which is harmless to x-ray workers, patients, and the future of the human race.

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RÉSUMÉ

Le péril que présente le mal des rayons a reçu plus d'attention et a été mieux étudié jusqu'à présent que plusieurs autres facteurs dont l'action pourrait être également néfaste à l'humanité. Le grand nombre de personnes engagées dans le projet Manhattan et qui, à de rares exceptions, s'en sont tirées sans aucune lésion apparente, a contribué à préciser les précautions à suivre au cours de la manipulation de source de rayonnement. L'étude des victimes japonaises des bombardements atomiques et celle des indigènes des îles Marshall y ont aussi contribué. A la demande expresse de leurs gouvernements respectifs le Conseil de recherche médicale de Grande Bretagne d'une part, et l'Académie nationale des sciences ainsi que le Conseil national de recherche des Etats-Unis d'autre part ont chacun publié un rapport sur les aspects médicaux et génétiques des rayons. Ces publications de même que de nombreux autres articles bien fondés ont servi de base à cette communication.

Les données de la Commission internationale de protection contre les radiations ont connu plusieurs modifications depuis 1928. Les doses permises furent graduellement réduites de 100 r à cette époque, à 15 r en 1947 et à 5 r à l'heure présente. Pendant longtemps on a toléré la dose de 300 mr par semaine dans les départements de radiologie des hôpitaux sans avoir eu à déplorer de conséquences fâcheuses. Si en d'autres termes le mal des rayons peut être évité en ne franchissant pas les limites précitées, il semblerait cependant que les très petites doses auxquelles les notions de tolérance ne s'appliquent pas puissent à la longue produire deux effets: le premier, l'abrégement de la vie causé par une sénilité précoce, que l'on a déterminé par l'analyse statistique de la durée moyenne de vie des radiologistes. Il convient cependant ici d'ouvrir une parenthèse pour rappeler que plusieurs médecins de santé précaire ont adopté la radiologie comme la carrière s'adaptant le mieux au mode de vie qui leur convient; il n'est donc pas étonnant que ces individus aient une durée moyenne de vie moins longue que celle des autres médecins en meilleure santé. Le deuxième effet est la leucémie. On a observé, encore d'après les statistiques, que cette affection est dix fois plus fréquente chez les radiologistes que chez les autres médecins. Les victimes de Hiroshima et Naga-

saki ont également souffert de leucémie à une fréquence plus élevée que celle de la population en général. Enfin il est à noter que les femmes enceintes soumises à la pelvimétrie ont donné naissance à des enfants chez qui la leucémie s'est manifestée moins rarement que dans un groupe non soumis à cette épreuve.

La plupart des examens radiologiques ne comportent qu'un danger minime, d'autres, comme la fluoroscopie prolongée que requiert l'angiocardioraphie, se rapprochent des limites de la tolérance et ne doivent être prescrits qu'en raison des avantages qu'ils peuvent conférer au malade dans son état de santé actuel. La dose de rayons stérilisante est voisine de celle qui cause la mort (500 r pour les hommes, 300 r pour les femmes). Ce niveau n'est jamais atteint en médecine même par les radiologistes de carrière exposés au rayonnement pendant leur vie entière. Il est établi cependant que le rayonnement augmente la fréquence de mutation des gènes. Ces dangers, évidemment, n'affectent que les individus en état de reproduire. Les émanations naturelles de rayons seraient responsables d'environ 50% des mutations dites spontanées. La plupart de ces mutations sont néfastes. Le fardeau ajouté du rayonnement artificiel ne fait qu'augmenter le nombre des mutations. Une dose de 50 r (rarement atteinte même par le personnel des départements de radiologie) doublerait le nombre de mutations, qui passerait de 2% à 4%. L'Académie nationale des sciences des Etats-Unis a recommandé que la dose moyenne pré-reproductive pour la population entière ne dépasse pas 10 r. A l'heure qu'il est la population reçoit environ 3 ou 4 r des radiographies médicales, dentaires et autres, ce qui forme une quantité semblable à celle que l'on retrouve dans la nature. Les essais d'explosions atomiques ne contribuent que 0.5 r à cette dose.

Même si le problème n'est pas actuellement alarmant il convient de continuer une surveillance active dans l'intention de le contenir dans ses limites présentes. A cette fin l'auteur recommande: un emploi plus fréquent des filtres d'aluminium, des cônes, des diaphragmes, de kilovoltages plus élevés et de films plus rapides; un emploi plus restreint de la fluoroscopie et de la pelvimétrie; des précautions particulières dans les examens radiologiques des enfants; la protection des gonades mâles et l'abandon des examens en série des populations normales pour fin de dépistage.

PRESENT CONCEPTS OF
RADIATION HAZARDS

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MORE THAN 60 years has passed since x-rays were first discovered and the initial work was carried out in radioactivity. Since then, more and more attention has been given to radiation hazards until we have reached the present all-time high. My personal experience with the anxiety of patients concerned with radiation hazards began when I was a junior intern at the old Montreal General Hospital. I was in the S.O.D. service at that time when a middle-aged man sat down by my desk and complained that "they had the x-rays turned on me all night". I enquired who "they" were, and he said he didn't know. "How do you know then that the x-rays have been turned on you?" And he explained that he could feel the rays. I turned

this patient over to the psychiatric department, but not all radiation anxiety can be so easily handled.

Though this patient was obviously psychotic, the anxiety of the "normal" patient is not far removed. His fears, too, are shaped by his culture, but the normal person is capable of accepting reasonable explanations to allay his fears. It is with these normal persons in mind that this paper is presented.

The subject will be presented in a straightforward fashion. Small variations and minor exceptions will not be discussed because these cloud the issue rather than clarify it. No apology is made for this "over-simplification". That it is presented simply does not mean that the subject is simple. The simplification represents the desire to present useful information in a fashion which can be understood by those who lack the technical training to assimilate more complicated explanations. The doctor in practice has two concerns: to what harm by radiation is he himself being subjected, and what is the real hazard to his patient?

RADIATION ANXIETY

So much has appeared in the newspapers, in journals, on radio and television, that much of the public has developed irradiation consciousness bordering on anxiety. People have a "free floating" anxiety of various intensities, and this anxiety precipitates out in a form acceptable and reasonable to the individual. In days gone by it was spirits, demons, and witches. Modern man favours cancer, tuberculosis, doctors, and operations, as a suitable subject on which to bring his anxiety to rest. The very up-to-date people prefer an anxiety about radiation. There is something fundamental in this, since perpetuation of the species depends on keeping oneself intact, in protecting mechanisms of procreation, and in protecting one's progeny.

In the light of this let us examine the role of radiation as a threat. The subsequent remarks are confined chiefly to medical radiation, since there is no question but that atomic warfare will do about everything feared for it. No comment will be made on present levels of nuclear fallout, since the charts illustrating the proportions of radiation received by man speak for themselves in this regard.

LOCAL TISSUE DAMAGE AND CARCINOGENESIS

These subjects will not be discussed in detail. Carcinogenesis is an extensive subject filled with variations and exceptions, and beyond the scope of this paper. Local tissue damage is not a significant hazard today. In the infancy of radiology accidental damage was done through lack of knowledge of irradiation hazards and failure to appreciate the delayed action of radiation. Thus earlier radium workers carried radium in their pockets, and tested the output of the machines on their own skin. Nowadays medical men are sufficiently aware of radiation to be conscious of the risk of local tissue damage.

TOTAL BODY DAMAGE

This has occurred in the past, and still occurs occasionally through accidents with radioactive isotopes and through faulty or unprotected apparatus. It is unnecessary to say that x-ray equipment should not be used without monitoring the equipment and taking suitable precautions to protect personnel and occupants of other rooms. Several accidental over-exposures have occurred when this has not been done.

Furthermore, non-medical fluoroscopic equipment has been investigated and shown to produce a very dangerous amount of radiation to personnel. Perhaps shoe-fitting fluoroscopes would be less popular if the operator realized that many of these machines are capable of producing a sterilizing dose of radiation. The real criticism is that these machines are of value as gimmicks to sell shoes, not to fit feet (a statement volunteered by one shoe merchant).

GENETIC DAMAGE

Genetic damage and its considerations constitute the greater fear in connection with radiation hazards, and by long odds it is the greatest danger. Every popular journal carries articles in this regard. Almost daily, if one reads the newspaper one can find some statement on the horrible fate awaiting mankind as a result of genetic damage.

Genetic damage refers to the production of inheritable mutant genes by radiation. These are chiefly recessive—that is, they will not appear in successive generations unless the germ cell of one parent bears a mutation similar to a mutation in the germ cell of the other parent. Radiation-induced mutations tend to be washed from the race unless continually fed back by further induced mutations. Many centuries would probably be required to produce an equilibrium.

Not all radiation-induced mutations are serious. Some have to do with colour of the hair or skin lesions. It is claimed by some that occasionally mutations may be an improvement, and we all know certain persons about whom we feel that any mutation would be an improvement.

Radiation mutations have been studied in mice. These show 40% non-lethal recessives; 40% serious recessives; and 20% dominants. The dominants have chiefly to do with sterility or semi-sterility (the tendency to early abortion—probably at seven or eight weeks in man). Thus by their nature these dominants tend to be eliminated.

SAFE DOSE AND PERMISSIBLE DOSE

In view of these harmful effects, it becomes desirable to hold genetically significant radiation down to a reasonably low level. For this purpose certain figures have been selected and are indicated on the associated charts. The figures selected will be considered too low by some, too high by others. We make no apologies for selecting them. They appear reasonable to us and we must start from somewhere. I stand ready to revise my selection when the evidence appears to warrant it, but to take action we must have a starting point.

A safe dose is that below which there is no statistical evidence of harm. A permissible dose is usually considered as even lower than a "safe dose", and can be thought of as 10% of a safe dose. Thus some towns in Illinois, whose water is obtained from wells, have a radioactivity in the water which is six times the permissible dose. Yet, statistically, the effects cannot be detected. No abnormalities have been found traceable to the water.

Let me say at this point that I consider all radiation harmful, at times imperceptibly so, and the risk may be ignored. If there is an advantage to be gained from the exposure, as in an x-ray examination, the exposure should be made. The real criticism is in faulty equipment, its incorrect use,

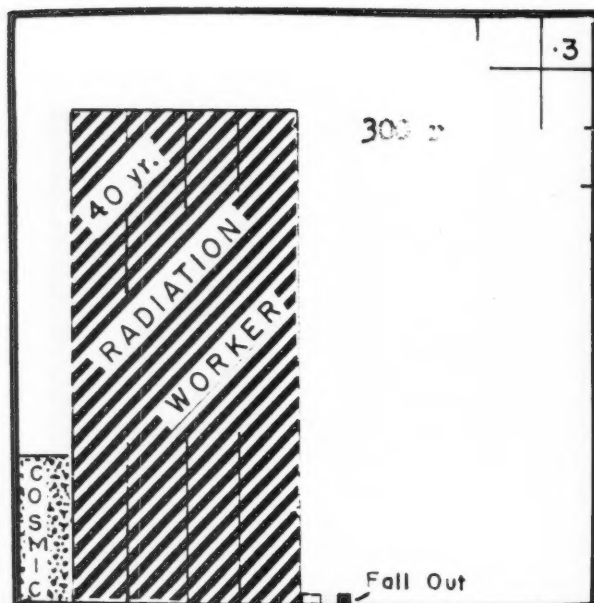


Fig. 1.—Safe lifetime dose for a radiation worker. Note the contribution by cosmic radiation and the comparative contribution by fallout from nuclear explosions at present rates.

the failure to use correct screens or cones, or to use shutters properly. These are needless exposures and are inexcusable.

SAFE TOTAL BODY DOSE

A value of 300 r in a lifetime is selected as the safe dose for radiation workers. The term "lifetime" is important. Nearly all children are born before their parents are 30 years of age (obviously this does not apply to doctors' families). It is assumed that no more than 50 r is obtained before the age of 30. Fig. 1 shows the "safe dose" range and how it is encroached upon by a radiation worker who has been in his business for 40 years at 50 mr per week.

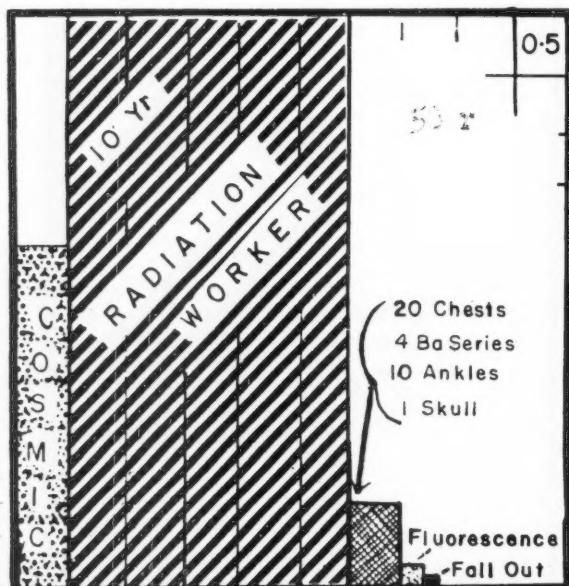


Fig. 2.—Permissible individual genetic dose. Note the contribution by cosmic radiation, x-ray examinations as listed, a fluorescent dial, and fallout.

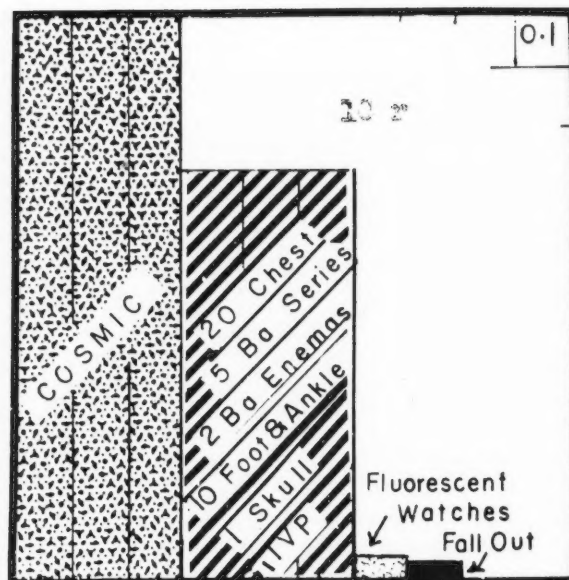


Fig. 3.—Permissible genetic dose for the average individual. Note contribution by cosmic rays. Note also that a fluorescent watch contributes more than present fallout from nuclear explosions.

PERMISSIBLE GENETIC DOSE

This permissible genetic dose is set at 50 r for the individual and a national average of 10 r before age 30. The expression "before age 30" is the key. After the childbearing period of life the concept of permissible genetic dose can be forgotten and only the safe lifetime dose considered; 50 r for the individual is selected because his mutant genes will be dispersed in the general population, who have fewer mutant genes.

A radiation worker, starting at age 20, receiving radiation at 50 mr weekly, will encroach upon his "permissible individual genetic dose" as shown in Fig. 2. As an average individual he will receive

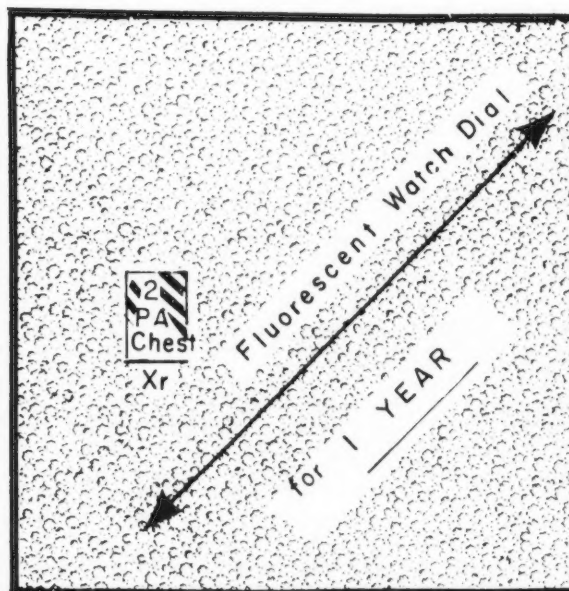


Fig. 4.—Comparison of the genetically significant dose from a fluorescent watch-dial worn for one year and two PA films of the chest. (Johns finds a range from 0.7-12 mr. per patient from miniature films. The dose from regular size chest films is much less.)

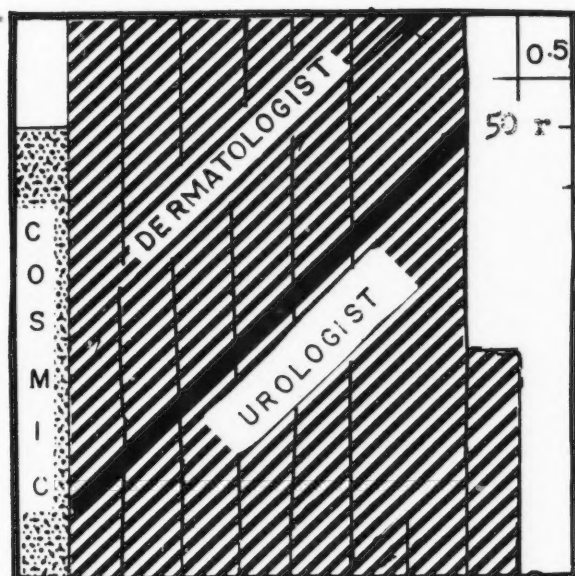


Fig. 5.—Permissible genetic dose for a physician. Note the encroachment by exposure (i.e. possible exposure to a dermatologist if he remains in the room with a patient for two 1-minute treatments per day, or to a urologist who remains in the room during the retrograde pyelography (two examinations with four films each.) The values here vary widely from case to case and should not be regarded as applicable to any one situation.

some x-ray examinations, and the possible contribution of these is shown. The x-ray examinations are assumed to have been made under approved conditions. These figures have no validity where the examinations are made without thought or knowledge of proper use of equipment.

The permissible genetic dose for the race, as mentioned above, is 10 r. Because this is the average for everyone, it must be kept low. It is estimated that this dose, over several generations, would increase the mutation rate by 20%. In Fig. 3 a number of x-ray examinations are listed to give some idea of how much can be done (under controlled circumstances) without exceeding the figure. The cost of the x-rays would be approximately \$450. About \$1200 of x-ray examinations would have to be done on every man and woman before the age of 30, at this dosage rate, to exceed the permissible figure.

For further emphasis on the low x-ray exposure from controlled examinations, note Fig. 4. Here the genetic exposure from two postero-anterior films of the chest is contrasted with genetic exposure from a fluorescent watch dial worn for one year.

In addition to radiologists, other specialists are exposed to radiation. Fig. 5 shows the possible significant genetic dose for a dermatologist or urologist in practice for 10 years. Age 40 is taken as a more realistic figure for the end of reproductive life of a medical man, not because he is more virile, but because economics cause him to delay marriage and production of a family.

SUMMARY

Vague anxieties in the general public are becoming focused on radiation hazards. The physician must know these hazards to reassure or warn the patient as is necessary.

All radiation is considered undesirable, but a certain amount of exposure is at times necessary for the greater good of the patient. Any useless exposure is not permissible. Useless exposures occur in shoe-fitting fluoroscopes, at times with fluorescent dials, and also when radiographs are made without proper attention to voltage, cones, film speed, cassette speed, grids, and protection of personnel.

In controlled centres the probability of exceeding the permissible dose by radiographic procedures is practically nil.

After the normal procreative years, genetic dose is no longer considered and the permissible total body dose applies. This increases the latitude of permissible exposures by almost tenfold.

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RÉSUMÉ

Il incombe au médecin de pouvoir renseigner ses malades à l'égard des craintes mal fondées qui règnent dans le grand public au sujet des dangers du rayonnement. En effet s'il est impossible d'affirmer catégoriquement que ces dangers n'existent pas du moins doit-on signaler qu'entre des mains expérimentées les rayons X ne présentent qu'un risque minime et que dans ce domaine comme partout ailleurs le risque doit être évalué en raison des avantages qu'il peut procurer. Il importe donc d'éliminer toutes les sources inutiles de rayonnement telles les montres à cadran lumineux, les fluoroscopes des magasins de chaussures et aussi tout outillage médical ou industriel qui ne donne pas le meilleur rendement possible par rapport à l'exposition requise.

BRONCHIAL OBSTRUCTION DUE TO PULMONARY ARTERY ANOMALIES: PULMONARY ARTERY ANEURYSM

Aneurysm of the pulmonary artery is one of the rare lesions of the cardiovascular system, occurring at a rate of approximately 1 in 14,000 autopsies. It is exceedingly uncommon to find a congenital aneurysm that cannot be accounted for by any known cause of pulmonary artery dilatation, viz., atrial septal defect, ventricular septal defect, patent ductus arteriosus, valvular pulmonic stenosis, and primary pulmonary hypertension. The symptoms and findings of this lesion include dyspnoea, cough, chest pain, hæmoptysis, and hilar mass with expansile pulsations. However, a thorough search of the literature failed to reveal any case in which a pulmonary artery aneurysm encroached upon the bronchial tree, producing serious obstructive symptoms. Two cases presented by S. Contro et al. (*Circulation*, 17: 424, 1958) are strikingly similar. In both a huge aneurysmal dilatation of the pulmonary artery impinged upon the walls of the left bronchus, leading to obstructive emphysema of the left lung and mediastinal displacement to the right. Unlike other forms of tracheo-bronchial obstruction of vascular nature, this lesion does not appear to be surgically correctible inasmuch as irreversible changes of the bronchial walls necessitate pneumonectomy, which is usually fatal in the first few months of life.

THE HÆMOPHILIC SYNDROME*

A REVIEW OF 27 CASES

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UNTIL RECENT YEARS the clinical syndrome of hæmophilia was thought to be due to a specific coagulation defect. Investigations of many workers have now shown that there are several apparently different coagulation deficiencies, any one of which may lead to this identical clinical entity. The majority of such patients lack one of the three clotting factors—antihæmophilic globulin (A.H.G.), Christmas factor, and plasma thromboplastin antecedent (P.T.A.). A.H.G. and Christmas factor deficiencies are usually inherited by males as sex linked recessives, though recently both deficiencies have been reported in women.^{1, 2} P.T.A. deficiency appears to be inherited by either sex.³

In recent years the introduction of new tests has greatly clarified the syndrome. The thromboplastin generation test⁴ and methods of assaying A.H.G. have been in particular most helpful. The purpose of this paper is to evaluate and correlate the results of these tests with the clinical picture in the hæmophilic syndrome.

METHODS

Standard methods were used for routine hæmatological estimations.⁵ Clotting times reported were measured by a modified Lee and White method (normal 6-12 minutes), and bleeding times by the method of Duke. Other tests reported are: thromboplastin generation,⁴ prothrombin consumption,⁶ and antihæmophilic globulin assay.⁷ The latter was modified to use brain extract⁸ in place of platelets.

During the years 1954 to 1957, 27 patients with the syndrome were referred to this laboratory for study. Of these, 24 were found to have an A.H.G. defect and three a Christmas factor defect. No P.T.A. deficiencies have so far been recognized. Nine of the 27 patients had a family history of hæmorrhagic disease similar to that of the patients.

The syndrome usually manifests itself within the first year of life (Table I). In this series, symptoms became apparent within the first year of life in 21 cases, and eight of them showed manifestations of the disease within the first week of life. In one case, that of a 3½-year-old boy (Table I, Case 7), there have as yet been no signs of unusual hæmorrhage.

The ways in which the syndrome first manifested itself are listed diagrammatically in Fig. 1. The fre-

No signs or symptoms (Table I, case 7)
Hæmorrhage following tonsillectomy
Intracranial hæmorrhage
Melaena; hæmorrhage into a joint*
Severe bleeding following cuts
Severe epistaxis
Severe bleeding following circumcision
Severe and easy bruising

*Occurred simultaneously

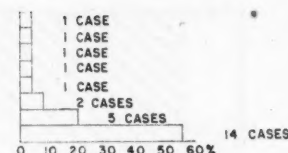


Fig. 1.—Frequency of presenting signs of hæmophilia.

quency of the various signs throughout the course of the disease is recorded in Fig. 2. By far the most common sign was severe and easy bruising, followed by hæmorrhage into joints and abnormal bleeding from cuts. Neurological involvement appears to be relatively uncommon. Of the two patients with nervous system involvement, one had a cerebral hæmorrhage and the other a deep tissue hæmorrhage in the leg which involved a peripheral nerve. Both had A.H.G. defects.

Intraocular hæmorrhage
Hæmorrhage involving the nervous system
Hæmorrhage following tooth extraction
Melaena
Hæmorrhage following surgery
Haematuria
Hæmorrhage into muscles
Severe epistaxis
Severe bleeding from cuts
Hæmorrhage into joints
Severe and easy bruising

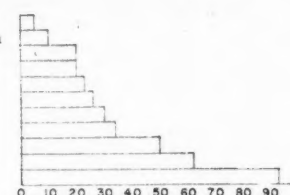


Fig. 2.—Frequency of various signs throughout disease (per cent).

Various laboratory tests were performed, the results of those pertinent to the syndrome being listed in Table I. The one-stage prothrombin activity was within normal limits except in two cases. These two patients (Cases 12 and 25) had a prothrombin activity of only 65% of normal and had, in addition to their hæmophilic defect, a second coagulation defect. The details of these cases will be reported later. In one patient, Case 18, the bleeding time was slightly prolonged to 4.5 minutes. The platelet count was slightly elevated in eight instances (Cases 3, 10, 12, 18, 19, 20, 23 and 25), but in the others was within normal range. It is felt that the increased platelet count in these patients was due to stimulation from recent hæmorrhage. Table I shows that in 25 patients where a Lee and White clotting time was determined five (Cases 7, 10, 18, 20 and 26) had a clotting time close to or within the normal range for this laboratory.

The thromboplastin generation test was performed in all cases and clearly differentiated them into one or other of the two deficiencies (i.e. A.H.G. and Christmas factor). The percentage of thromboplastin generated varied from 3 to 38%, with the exception of one case of Christmas disease which showed 70% of normal generation. Greater dilution of the serum and mixing with serum from a known case of Christmas disease clarified the diagnosis in this patient.

The antihæmophilic globulin assay was performed on 19 of the 24 patients suffering from this defect, and the level of the factor varied between 0.1% and 6% of the normal (Fig. 3). It

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TABLE I.

		Age in years	Age of onset	Severity of the disease	A.H.G. assay (% A.H.G.)	Thrombo- plastin generated (%)	Bleeding time (minutes)	Clotting time in (L. & W.) minutes	Platelet count c.mm.	Pro- thrombin activity	
1	T.T.	1.0	++	(a)	0.2	12.0	2.5	16.0		100%	Brother of No. 6
2	P.M.	1.0	++	(a)		14.5	3.0	5	452,000	100%	
3	M.M.	1.5	++	+++		19.5	3.0	(cap.) 4	918,000	100%	
4	H.K.	1.5	+	+++		24.0	2.0	(cap.) 27.0	478,000	100%	Brother of No. 8 Cousin of No. 1 and No. 6.
5	T.I.	2.0	+++	++	0.2	32.0	2.0	22.0	423,000	100%	
6	H.T.	3.0	++	+++	0.7	17.0	2.5	25.0	469,000	95%	
7	D.M.	3.5			3.5	29.0	2.0	12.0	210,000	100%	Brother of No. 1 Brother of No. 10 Brother of No. 4
8	W.K.	4.0	+	+++		11.0	2.0	72.0	444,000	100%	
9	M.M.	5.0	+	++	0.2	22.0	1.5	36.0	450,000	100%	
10	K.M.	6.5	++	+	5.2	15.5	1.0	13.0	604,000	100%	Brother of No. 7
11	G.M.	7.0	+	+++	0.7	7.0	2.0	98.0	450,000	100%	
12	G.C.	9.0	++	+++	0.1	14.0	1.5	42.0	546,000	65%	
13	J.W.	9.0	++	+++	0.2	3.0	2.5	28.0	318,000	90%	
14	J.H.	9.0	+	+++	0.2	24.0	2.7	48.0	432,000	87%	
15	D.H.	13.0	++	+++	0.2	27.0	1.0	22.0	270,000	100%	
16	J.F.	20.0	+++	+++	1.6	5.0	2.0	27.0	323,000	100%	
17	L.H.	21.0	+++	+	0.5	5.0	2.0	56.0		100%	
18	G.W.	23.0	++	++	1.2	9.5	4.5	14.0	583,000	80%	
19	J.P.	25.0	+	++	6.0	35.0	2.0	25.5	589,000	100%	
20	A.M.	31.0	+++	+	1.8	24.0	2.0	12.0	523,000	80%	
21	S.C.	33.0	+++	+	3.7	14.0	2.0	15.5	163,000	100%	
22	G.B.	37.0	++	+++	0.6	11.0	3.0	50.0	703,000	100%	
23	J.J.	50.0	+++	+++		22.5	1.0	16.5	664,000	100%	
24	E.W.	54.0	+	+++	0.5	8.0	2.5	74.0	426,000	100%	
Christmas Disease											
25	R.J.	4.0	++	+++		38.0	2.0	72.0	612,000	65%	
26	W.M.	17.0	+	+		70.0	1.0	13.0	251,000	100%	
27	B.L.	22.0	++	+++		23.0	2.5	45.0	420,000	100%	

Age of onset

- + within the first seven days of life.
- ++ between the first seven days and the first year.
- +++ between the first and ninth year.

Severity of disease

- + slight
- ++ moderate
- +++ marked

(a) Too young for adequate assessment.

is interesting to note that of two brothers (Table I, Cases 7 and 10) with A.H.G. defect, the one showing signs and symptoms of the disease had a higher level of A.H.G., namely 5.2%, than the other who was symptom-free and had a level of 3.5% (Case 7). In six patients, fibrinogen levels were measured and were all within normal limits. Prothrombin consumption tests were performed on eight of the patients and all gave abnormal results. With the development of the thromboplastin

generation test, however, the prothrombin consumption test is no longer routinely performed in this laboratory on patients with the hæmophilic syndrome.

Considerable difficulty was encountered in attempting to interpret correctly the clinical severity of the disease in the patients. The cases were divided into mild, moderate and severe, using the following clinical signs and symptoms: restriction of activity, deformities of joints and residue of previous hæmorrhagic episodes, as well as the number of hospital admissions and amount of therapy required. The severity of the disease together with the A.H.G. levels is shown in Table I.

DISCUSSION

Even in an area such as British Columbia, where there has been heavy recent immigration and family history is often not well known, the incidence of a positive family history of hæmorrhage (9 cases) seems too low to be accounted for simply by a lack of knowledge of the family background. To account for the lack of family history, Macfarlane⁹ has postulated a high muta-

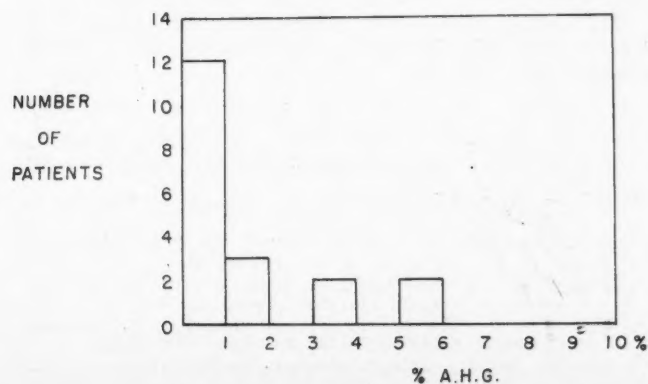


Fig. 3.—A.H.G. assay.

tion rate in hæmophilia, and it is also possible that the disease in some instances has been passed down from female carrier to female carrier only to manifest itself after several generations in a male offspring, the family background having been forgotten.

The lack of hæmorrhagic symptoms at birth may be accounted for by the transplacental passage of the hæmophilic factors, but it seems strange that, since A.H.G. in particular is utilized and disappears very rapidly from the blood stream, some evidence of hæmorrhage should not be noticed after 24 or 48 hours.

The clotting time was of little help in the diagnosis of five of 25 cases in this series. Four of these patients had an A.H.G. defect and their A.H.G. assays were 1.25% or greater. Symptoms in all five patients were mild.

The thromboplastin generation test was the cornerstone of diagnosis from a laboratory point of view in all the patients, though the percentage of thromboplastin generated did not correlate particularly well with the severity of the disease. Nonetheless, this test is of the greatest value in the diagnosis and differentiation of hæmophilic disorders; where the routine dilutions in this test fail to show a defect, greater dilutions may be used and compared with the normal control at a similar dilution. In an effort to standardize this test we have recently made the final platelet suspension up to an equivalent of 750,000 platelets per c.mm. The chloroform extract of brain as described by Bell and Alton⁸ has proved most valuable as a substitute for platelets in the routine thromboplastin generation test in the laboratory.

The anti-hæmophilic globulin assay correlated well with the severity of symptoms of the patients where the assay revealed a level of 1.5% or greater. Some difficulty, however, of correlation between severity of symptoms and A.H.G. assay was found where the level was under 1.5%; for example, patient L.H. (Case 17), with a clotting time of 56 minutes and an A.H.G. assay of 0.5%, has exceedingly mild symptoms; indeed he participates in amateur boxing events without any particular difficulty. It seems likely that some other factor or factors may be involved in the production of manifestations of the syndrome, in addition to a low A.H.G. level.

The episodic nature of the syndrome was quite noticeable in taking the case histories. Trauma that one day would cause only the mildest of bruises, another day would cause a most severe hæmorrhage. Patient A.M. (Case 20), for example, drives a tractor. This patient will go for several months without any untoward effect despite the severity of the stress and strain involved in his job. Yet, suddenly, a relatively minor traumatic episode will result in a massive hæmatoma. Whether this episodic pattern is due to variation in level of A.H.G. or due to variation in other factors that

seem to be associated with hæmostasis is not yet clear.

A further feature of interest in this series was the fact that of eight patients who were available for reassessment and over the age of 15, four stated that they felt their hæmorrhagic tendency had undergone considerable improvement about the time of puberty. This would appear to be confirmed by the relative infrequency of their admissions at present compared with admissions in their childhood.

For the past six years, administration of fresh frozen plasma has been the routine therapy for the uncomplicated hæmorrhagic episodes of most of these patients. This plasma (supplied by the Blood Transfusion Service of the Canadian Red Cross) is put up in 125-c.c. quantities. Transfusion of one of these bottles on admission and a further bottle in 12 to 24 hours has proved most satisfactory for the rapid control of joint hæmorrhage as well as of intramuscular and subcutaneous hæmatomas. For the more severe bleeding complications, greater quantities have been used, as well as fresh blood for replacement where necessary. The above therapeutic effect of these quantities of fresh frozen plasma refers to the younger patients in this series. Our experience in treating the adults as well as in treating severe trauma and operations has been too limited for appraisal.

SUMMARY

A review of 24 patients with A.H.G. defect and three patients with a Christmas factor defect is presented. The frequency of presenting signs as well as the frequency of the various signs during the course of the disease is reviewed and the severity correlated with various laboratory procedures. Good correlation is obtained between A.H.G. assay and the severity of the disease where the A.H.G. assay is over 1.5%. In those patients with an A.H.G. assay of less than 1.5%, however, there is poor correlation with the severity of the disease.

Administration of fresh frozen plasma appears to be a satisfactory form of therapy, and up to the present time no complications of or refractoriness to this therapy have been noted.

The authors wish to record their appreciation to the various physicians concerned, for being able to investigate and report upon the findings in the cases recorded.

The authors also wish to thank Dr. A. M. Evans of the B.C. Cancer Institute for the facilities to carry out this investigation.

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RÉSUMÉ

L'auteur présente une série de 24 malades atteints de déficience du facteur antihémophilique et de trois autres souffrant de déficience du facteur Christmas. La fréquence et l'intensité des signes cliniques au début et pendant la maladie sont confrontées avec les différents résultats de laboratoire. On obtient une bonne corrélation entre

l'intensité des troubles et le niveau de F.A.H. quand celui-ci est au-dessus de 1.5%. Chez les malades dont la concentration de cette globuline n'atteint pas ce niveau, la corrélation ne tient plus. L'administration de plasma frais congelé constitue une forme satisfaisante de traitement et jusqu'à présent on n'a observé aucune complication ou aucune intolérance à cette thérapie.

MANIPULATION IN BACK PAIN

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THAT MANIPULATION will relieve back pain in many instances, few will argue. There the agreement ends. Those who manipulate swear by it. Those who don't, condemn it. Those who don't manipulate warn of all the catastrophes that can result from the practice, while the patients of those who do flock to their offices for relief.

This conflict comprises one of the medical anomalies of the twentieth century. The standard medical treatment for lumbago and other acute backache is bed rest and sedation, counter-irritation and heat, possibly supplemented by massage and injections of procaine. The doctor whose therapeutic armamentarium is thus limited is at a disadvantage; his patients soon find that in the majority of instances they can get rapid relief elsewhere without the loss of time. This, from any of the large number of irregular practitioners who can so often relieve the pain but whose training has made them mechanics, unable to make a diagnosis because of a lack of training in pathology. As a result, fantastic claims are often made as to the conditions they cure.

The purpose of this paper is to examine this anomalous situation, to speculate on the etiology of the pain, and to describe a method of manipulation that for 20 years has brought gratifying results with none of the disasters that so many predict. The reason we took up manipulation was an interest in backache, with the early discovery that many patients who failed to respond to routine medical treatment went to a manipulator and received immediate relief. This discovery was followed by acceptance of the classic advice, "If you can't whip 'em, join 'em," at least to the extent of borrowing their technique.

HISTORY

Manipulation as an art is as old as medicine. The secrets of its practitioners were usually handed down in the family. The operator himself was often attached to a monarch or a wealthy household.

Unlike the barber surgeons, the manipulators were not taken into the fold of orthodox medicine. Nevertheless, a few doctors, particularly in the United Kingdom, took up the art and some of them became great names in medicine. But their ideas were not generally accepted by the medical profession at large and, though their methods are available to all, few have taken them up.

That manipulation can bring comfort to mankind there can be no doubt. There are few communities on this continent big enough to support four or five doctors that do not also support one type or another of practitioner who treats by means of manipulation. That they often relieve pain and discomfort is evidenced by the fact of their continued presence and prosperity. If the patient is suffering from what they treat, the patient will be relieved. That they can cure any condition is questionable. Most symptoms that will respond to manipulation are due to the presence of degenerative disease. This can be managed, or its progress even arrested, but it is not cured. The diagnosis and treatment of other organic disease must be based on a knowledge of current pathological concepts, and few unorthodox manipulators have this. Without this understanding they treat conditions that are beyond the scope of their method and so delay the institution of proper treatment or even do harm. Thus they have rightly earned discredit with the medical profession, though it is unfortunate that their art is included in this disrepute.

ETIOLOGY OF BACKACHE

There is a great mass of medical literature devoted to the study of the causes of backache and the referred pain that so often accompanies it. It has been demonstrated that irritation of any of the deeper structures in the back can cause backache together with referred pain. Thus irritation of muscles, ligaments, synovium, dura and bone can cause backache and referred pain.

The pattern of reference has been indicated by Feinstein and associates,¹ who by injecting hypertonic saline into the intervertebral ligaments of medical students mapped out the areas of reference for the whole spine. They found that the pattern of referred pain tended to be segmental but showed

considerable overlap and differed in location from the conventional dermatomes. It was found that stimulation of the upper eleven dorsal nerves, for instance, resulted in pain referred to the chest and abdomen and that this pain often mimicked visceral pain. Stimulation of the twelfth thoracic segment, however, gave referred pain into the hip region. Thus the areas of reference are often quite bizarre.

A striking example of the bizarre pattern of reference is seen in the dorsal area. A patient complains of a pain extending down the arm. Examination sometimes shows a tender nodule just to the side of a dorsal spinous process somewhere between T1 and 5. Pressure on this nodule aggravates the pain in the arm. Injection of the nodule with procaine relieves it. Since no nerve is known to extend into the arm from say, T4, the method of production of the pain into the arm is not known. It is assumed that the irritation of the fourth dorsal root sets up an irritable focus in the cord at a more active level and thus gives rise to a referred pain down the arm. The tender nodule is the so-called area of fibrositis, which is presumably a very limited area of muscle spasm since it and the referred pain will often instantly disappear on manipulation. It is this type of referred pain that gives rise to erroneous diagnoses of pleurisy, heart disease, appendicitis and other conditions; when the pain is relieved by manipulation, support is given to the lay-manipulators' claim that they cure these conditions.

Although any of the deeper structures in the back can give rise to symptoms, since the majority of backaches will respond to manipulation, it is probable that the origin of the pain lies in relationship to one of the joints, either the zygapophysial joint or the intervertebral disc.

Zygapophysial Joints

In these, adhesions may produce symptoms. Mennell,² who spent some years in America, believed this although he also claimed that there was a binding of joint surfaces which could be freed by manipulation. Kraft and Levinthal³ describe "facet synovial impingement"—a nipping of redundant synovium between joint surfaces. Harris and Macnab⁴ have shown the frequency of degenerative changes in the posterior joints but do not relate them to symptoms.

It is our belief that backache arising from these joints is rather rare. We had two cases in which we thought that the pattern was that of mechanical disturbance in one of the posterior articulations. Axial views through the minor articulations in each showed evidence of a loose body. One patient was referred for surgery and the condition proved to be osteochondritis dissecans. The other refused operation and has been lost sight of. Very rarely cases are seen with arthrosis in the minor articulations where the symptoms justify the assumption that the pain arises from them.

Intervertebral Discs

Since the discovery in 1934 by Mixter and Barr that sciatica could be produced by pressure of a protruded disc, much attention has been focused on this structure. More and more authorities are leaning to the belief that disturbances in the disc mechanism are responsible for the majority of backaches,⁵ though, because of the nature of the condition, this belief is difficult to prove.

In 1945, Cyriax⁶ put forward the concept that lumbago was due to pressure on the dura mater by a central displacement of the intervertebral disc. If the disc is displaced further laterally, he claims, the pressure falls on the dural investment of the nerve roots and gives rise to vague referred pains which are not entirely segmental in their reference. Still further protrusion of the disc causes pressure on the nerve parenchyma itself, with resulting segmental and geographic distribution of pain and often reflex changes.

According to Cyriax,⁷ the success of manipulation in some cases of backache but not in others depends on the composition of the portion of disc that is producing the pressure. The annulus fibrosus is a double crescent of fibrocartilage, very similar to the meniscus in the knee joint. As in the knee, this crescent of cartilage can be torn or undergo degeneration and then be displaced, giving rise to pain; as in the knee joint, it can frequently be manipulated back into a position where it no longer produces symptoms.

The main differences are that, because of the fact that the back is so unsuited mechanically to the upright position and because the resultant inherent strain causes early degeneration of the intervertebral disc,^{4,8} this occurrence is much commoner in the lumbar region. Also, the knee joint itself is a very sensitive structure; the disc and its investments are not, or only slightly so.⁹ The sensitive structure, the dura, lies outside the joint—hence the vagueness of symptoms and confusion in their interpretation.

As in the knee joint, this pain produced by a displaced and impacted fragment of annulus will probably come on instantaneously at the time of some strain or faulty movement in the flexed position; if it can be relieved, this will probably happen just as quickly.

The other constituent of the disc, the nucleus pulposus, is a mushy semi-solid body which can be said to ooze rather than slip. If there is a breach in the annulus but it is not causing pressure on the dura or nerve roots, no symptoms will result. However, under suitable circumstances, this mushy nucleus can, over a period of hours or days, ooze out from its normal position and come to press on the dura centrally, thus causing lumbago. If it moves further laterally, it will press on the dural extension which embraces the nerve root, and produce vague pains in any of the regions from thoracic cage to knee. Further lateral move-

ment of the nucleus may result in pressure on the nerve parenchyma with resulting pain of sciatic distribution with positive neurological signs. Or in primary sciatica, the nucleus has been displaced laterally without pressing on the dura on its way.

This theory admirably fits the natural history of the majority of backaches and explains the response to manipulation. It also explains why manipulation is at times unsuccessful and why traction will then frequently relieve the condition.¹⁰

It may not be that the nucleus oozes. We know that by twenty years of age the nucleus has started to degenerate^{4, 8} and by fifty it is pretty well cicatrized. Yet traction may relieve backache in patients who are in their seventies. It is more probable that the distraction of the vertebral bodies permits the reposition of fibrillated fragments of cartilage, particularly since manipulation is often successful when associated with traction.

Though this theory may not be widely accepted, there is much to support it.^{7, 11} Verified or not, it makes an excellent working hypothesis for the physician who wishes to treat backache. The history of the development of the backache, and the findings on physical examination, are readily explained in this manner while the response to treatment follows accurately the postulates of this theory.

Of course, it is recognized that a multitude of other conditions can cause backache and referred pain, but these are rare and one might spend a lifetime in general practice without encountering one of them. If any are present, manipulation will do no harm, and failure to respond is the indication for further investigation.

SELECTION OF CASES

Once one accepts the thesis that backache can arise in this manner, the diagnosis is relatively easy. The majority of cases either active or chronic will fall in this category. Sprain of the back coming on after only bending, or lifting a light weight, becomes disc syndrome. The true sprain of the back—sprung back—with tear of the interspinous ligament is produced by tremendous force and is a relatively uncommon injury.

Lumbago, whether coming on for no apparent reason or following a period of stooping, is disc syndrome. Meralgia paræsthetica, usually attributed to pressure on the nerve roots by osteophytes on the lumbar bodies, is disc syndrome. So is pain in the buttock, in the inguinal region and along the iliac crest; that is, in any of the lumbar areas of reference. Pain referred just lateral to the sacro-iliac joint is very common. It is this pain that made sacro-iliac disease a favourite diagnosis in previous years, and manipulation relieved it. However, the sacro-iliac ligaments are not tender as they would be in subluxation, and it is our belief that this pain arises from disc disturbance.

According to Burke, "In an otherwise well patient, a disc lesion is present if there is pain in any part supplied by a spinal nerve when the signs of inflammation are absent." This is a good rule to follow. "The otherwise well patient" rules out the backache from organic causes—ankylosing spondylitis, Paget's disease, tuberculosis and neoplasm, as well as backache referred from the abdomen and pelvis.

The only other common condition to be ruled out is backache due to faulty posture. One of us in 1951 published an article¹² stating that out of 200 cases of backache, faulty posture had been responsible for 47%. Since we have embraced the present theory, that percentage has been reduced to between 4 and 5%. We believe that the good results obtained in that group were due to the exercises prescribed, which by building up the muscles render the disc more stable. This fact is well recognized: that no matter what the theory as to the cause, exercises designed to build up the back and abdominal muscles are of the greatest value.

Since we accepted this theory two years ago, we have seen over 2000 cases whose presenting complaint was pain in the back, or pain that arose from the back. In these, a diagnosis of disc syndrome was made in over 90%. The response to treatment followed a pattern that could be predicted by this theory and appeared to justify the diagnosis.

The history will frequently indicate whether manipulation will be successful. Pain coming on instantaneously on a bend or twist is usually considered to indicate displacement of a fragment of annulus that can be manipulated back into place. The story of a nuclear protrusion is different: the patient may think he has wrenched his back but in a few minutes the distress disappears; maybe that evening or maybe days later a sharp stab of pain is felt when rising from an easy chair. This latent interval is considered to be the time required for the nucleus to protrude sufficiently to cause pressure. The medico-legal implications are obvious.

By and large, the longer the pain has been present, the less likely is manipulation to succeed. This applies particularly to sciatica if it is of over six months' duration. Other pains, present for years, are often relieved almost immediately.

On examination, further information as to the probable success or not of manipulation is obtained. Examination is carried out in the three planes of movement: antero-posterior, lateral and rotational. Flexion and extension and lateral bending are tested in the upright, torsion in the supine position; straight leg raising is tested in both. In the prone position, muscle spasm and tenderness are sought. (The assumption here is that a general physical examination and suitable tests to rule out organic disease have been carried out.)

Increasing pain on flexion is thought to indicate the presence of a protruded nucleus and makes the success of manipulation less likely. A painful arc—that is, pain on partial flexion and relief by full extension—is considered diagnostic of a fragment of articular cartilage (i.e., annulus) loose in the joint.⁷

If there is sciatica with marked lateral deviation of the spine, manipulation will probably be unsuccessful, particularly if there is more than one neurological sign. If lateral flexion towards the painful side increases the pain in the back or if movements other than flexion increase the referred pain, it is improbable that manipulation will help.

In the prone position, the important procedure is palpation. In every case we have seen there has been muscle spasm, and the disappearance of this muscle spasm is the objective indication that the manipulation has been successful.

X-RAY EXAMINATION

Ideally, x-ray examination should be made in all cases, but economics is a factor. In the sudden acute attack, it can possibly be dispensed with; but if response to treatment is not rapid, it should be carried out.

The radiographs are frequently negative, particularly in patients under 30. The lipping of the vertebral bodies which has been named osteoarthritis is now known to be an ossification in the vertebral ligaments, a protective mechanism to an unstable disc,¹³ and in itself is not productive of symptoms. This has been shown by Hussar and Guller¹⁴ who surveyed the clinical and radiographic findings in 500 male hospital employees. No correlation could be found between the severity of the radiographic findings and the incidence and severity of pain. Seventeen had narrowed disc spaces but none of them had radicular symptoms. Of 13 who had pain referred to the lower extremities, 10 had negative radiographs while the other three showed lipping without narrowing of the intervertebral spaces. The conclusion was that positive radiographic changes are related to age, body weight and physical work, and not to pain.

Radiographic evidence of osteoarthritis, or arthrosis, is occasionally seen in the zygapophysial joints but we feel that the number of cases with symptoms is very small.

CONTRAINDICATIONS

There are few contraindications. Obviously, if the pain is too great, manipulation cannot be attempted. Cyriax warns against manipulating where there is danger of compressing the fourth sacral root, and where there is: (1) bilateral sciatica; (2) referred coccygodynia; (3) paræsthesia in the saddle area, perineum, genital area or rectum; (4) interference with bladder function related to the lumbago or sciatica; (5) impotence. These cases are very rare.

MANIPULATIVE TECHNIQUE

This follows a definite pattern and after each manoeuvre the practitioner examines the patient to assess the result. First, the back is palpated to determine any change in the muscle spasm. Disappearance of spasm usually indicates that the condition has been corrected. Then the patient is asked to stand and the movements outlined under examination are tested. If the pain has almost entirely disappeared, no further manipulation is

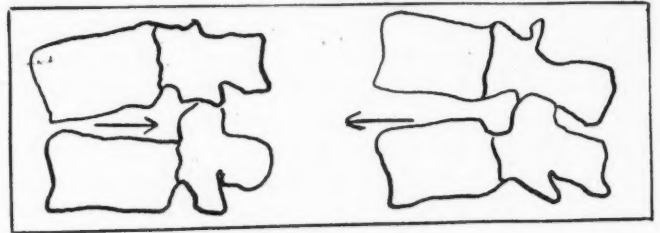


Fig. 1.—Diagram illustrating effect of flexion on the position of the intervertebral disc.

carried out. There is usually some residual discomfort for a few hours after replacement of the displaced tissue. If improvement is slight, the manoeuvre is repeated until no further change is produced. Always it is borne in mind that the objective is to relieve pain, not produce movement. A rigid spine is often a painless one. If the patient complains of more pain, the same procedure is not tried again and manipulation may be discontinued or another approach tried, depending on the opinion and experience of the operator.

Manoeuvre 1. Hyperextension by Means of Pressure on the Spinous Processes (Fig. 2):

Reference to the diagram (Fig. 1) will make it apparent that downward pressure applied to the spinous process will tend to cause distraction of the vertebral bodies, the apophyseal articulations acting as the fulcrum. This slight increase in the space may bring about disimpaction of the frag-

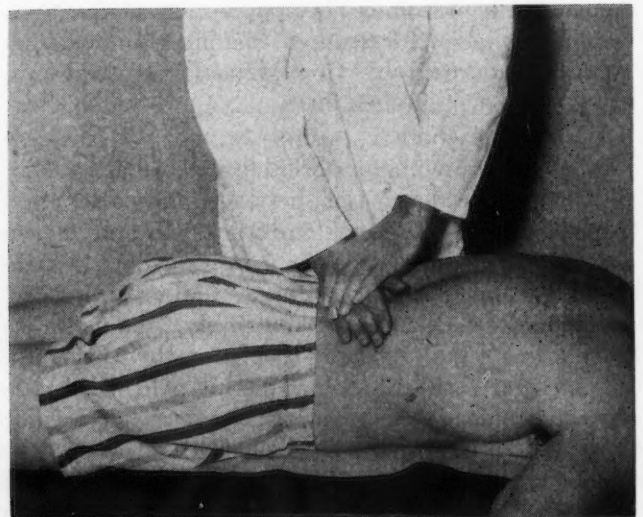


Fig. 2



Fig. 3

ment of meniscus; or it may permit the protruded nucleus to return to its bed.

(a) *The thrust*.—The right hand is placed over the spinous process, tilted in such a manner that the mid-shaft of the fifth metatarsal is in contact with the bone. The arm is straight. The force is increased by applying the left hand over the right. Pressure is applied by leaning forward so that part of the body weight is transmitted to the spinous process through the arms and hand. This is done in a series of jerky motions, starting in the upper lumbar area and working downwards to the area where the majority of displacements occur. If no increase in pain occurs, the thrust may be applied with all the force one can muster. During this procedure the operator or the patient will often feel or hear a click or snap. This is not a necessary accompaniment of the procedure, and relief is frequently obtained without it.

(b) *The prolonged press*.—The positions of the patient and the operator are the same, but in this

manceuvre the operator leans heavily on the spinous process for a period of from one to three minutes (by the clock; time passes very slowly in this position). This occasionally will bring relief, thought to be due to the return of the nucleus to its bed. In any event, we have found it a useful therapeutic test, as usually the patient will say that his pain is somewhat easier; however, if the muscle spasm persists, one knows that the condition is not corrected and the patient is sent for mechanical traction.

Interestingly enough, many patients have reported that when they have felt symptoms coming on they have asked some member of the family to carry out this procedure and have obtained relief. It is a well-known fact that in disc syndrome, no matter what the treatment, the sooner it is instituted the quicker the recovery.

Manceuvre 2. Rotation by Pressure:

In this manceuvre, force is applied in the same way as in Manceuvre 1, except that the heel of the hand is placed lateral to the spinous process (Fig. 3). If there is tenderness, and there usually is, pressure is applied to the less tender side. After this manipulation the results are again assessed.

Manceuvre 3. Direct Rotation:

(a) *Without leverage* (Fig. 4).—The patient lies on the side. One hand is placed on the anterior part of the iliac crest, the other on the shoulder. Rotational force is then applied. As well, some distracting force can be applied by a pull in the caudad direction on the iliac crest.

(b) *With leverage* (Fig. 5).—The patient lies supine. One heel is placed against the inside of the opposite knee. The operator grasps the flexed knee with one hand, the shoulder on the same side with the other. Powerful rotational force can thus be applied by fixing the shoulder and carrying the knee to the opposite side. This can be a constant tension or the slack can be taken up and a sharp



Fig. 4

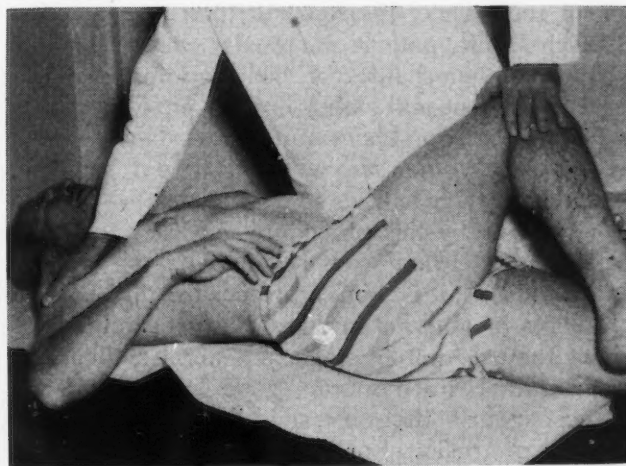


Fig. 5

thrust carried out. Usually torsion to one side is painless or much less painful. Torsion should first be tried on the less painful side. To rotate in the opposite direction, the procedure is reversed.

Again the results are checked as in *Manœuvre 1*. If satisfactory, nothing more is done. If not, the decision is made whether to proceed or not.

Manœuvre 4. Lateral Flexion:

Occasionally if the above steps fail a fragment of annulus is disimpacted by forceful lateral flexion: (1) with the patient in left lateral decubitus and the force applied by elevating the legs; (2) with the patient supine, the thighs elevated to ninety degrees, and the knees flexed to the same extent. By grasping the knees in the flexure of the elbow, the operator can produce considerable lateral flexion force.

Manœuvre 5. Rapid Distraction:

Occasionally when all the above have failed, we have succeeded in relieving symptoms by having the patient lie supine; one leg or the other or both are grasped above the ankle and a sudden quick jerk is given. One can only imagine a fragment of annulus being disimpacted in this way.

These are the manipulations that we have found most valuable. Many others are described and the manipulative response to the problem presented will depend on what the operator considers the mechanics of the displacement, his experience, and the response to the preliminary manœuvres.

Sometimes, if the pain is severe or there is a great deal of muscle spasm, the manipulation may be preceded by the application of heat or by massage. We have not manipulated under an anæsthetic for years. It is a blind procedure and all opportunity for assessing the response to the various movements is lost. Often when it is said that the patient got worse despite manipulation under anæsthetic, one wonders whether it was not because of it.

AFTER-TREATMENT

The main purpose of after-treatment is prevention of recurrence. Flexion will tend to cause this (Fig. 1). The patient is usually shown on the skeleton the mechanics of his condition and advised how to sit and stand, how to pick things up, and how to put on shoes and socks—always avoiding flexion. Women are advised to get someone else to wash their hair, as so often a painful episode is brought on by this procedure. All are advised to carry out extension exercises while lying on the abdomen. This, it is thought, forces the nucleus and fragments of annulus forwards into the interspace where they do not impinge and are less likely to be protruded. Furthermore, good lumbar muscles protect against the excessive flexion which can result in protrusion. For those who do heavy work, a support is often required.

Patients who have had two or more attacks per year for years now advise that since they have adopted these rules they are symptom-free as long as they follow them.

Very occasionally, after one feels by testing movements that correction has been obtained, there is some residual pain. If this continues for more than 24 or 48 hours and if a sensitive nodule can be found, it is injected with procaine, or heat and massage may be recommended. Cyriax advises epidural procaine for chronic pain with good movement, attributing the pain to a chronic bruise of the dura which may be treated like chronic bruises in other situations.

RESULTS

In our enthusiasm, we manipulated all cases but the limitations soon became apparent as outlined under the heading "Selection of cases". In straight backache, where the history suggested an annular lesion, relief was obtained in just under 75%. Cyriax claims a higher percentage. It is probably a matter of skill and experience. If manipulation is to succeed, there is an even chance that it will do so at the first sitting. However, if there is improvement on the first attempt, we will try again the next day. Four attempts is our limit. If the pain is not relieved, the patient is then sent for mechanical traction.

If there is evidence of nerve root irritation, the chances of manipulation succeeding are cut in half. Again, if manipulation fails the patient is sent for traction.

Pain so severe as to keep the patient in bed is no contraindication to manipulation. Possibly the chances of relief are increased, as it is well known that the height of the individual increases after a few hours in bed, mostly because of an increase in the intervertebral space. On a theoretical basis the wider space would increase the chances of reducing a dislocated fragment of cartilage. Certainly we see many patients who are afraid to make an effort to get out of bed but who, following manipulation, get up and move with ease. Others who have failed to respond to manipulation at first, do so after a day or two in bed.

It is to be noted that one can only undertake to relieve the pain. From the nature of the lesion it is apparent that cure cannot be effected by these means; as in other herniations, reducing the hernia does not cure it. Nor does one attempt to cure arthrosis in any joint. It is managed and an effort made to relieve the pain; wear-and-tear should be reduced and eventually the chances are that the condition will become painless. Similarly in lumbar disc syndrome no claims are made of cure. After the attack is relieved, the emphasis is on prophylaxis through an understanding of the mechanics of the displacement. Since attacks are not nearly as common after 50, it is probable that by about

that time the cicatricial process will have fixed the disc in position.

Much is said about the hazards of manipulation. We do not know what they are. Cases have been reported of necrosis of the cord due to pressure from a prolapsed disc, but these were in the cervical and dorsal regions. Possibly the fear is of displacing the disc to the point where it will be impacted and laminectomy will be required. In any we have referred for laminectomy, the pattern did not change from the beginning and it was our feeling that the protrusion when first seen was irreducible. We have seen many cases that have been treated by irregular practitioners who manipulate much more vigorously than we do, and none of them has required laminectomy as they responded satisfactorily to traction. It may be that manipulation can cause harm but we have not seen it. It is our belief, based on long experience, that manipulation is no more beset by hazards than many other recognized procedures in therapy, while its results are often more dramatic and sure. For example, the injection of procaine is recommended in certain types of backache, always with the admonition that there should be no hypersensitivity to procaine. We believe that the bad results from manipulation are no more frequent than the bad results from procaine.

If available, a physiotherapist trained in these methods can carry out the manipulation. Our thanks are due to Mr. C. R. Morton, physiotherapist, of Red Deer, who has been the operator in many of these cases.

SUMMARY

A concept of the mechanism of production of many backaches is presented. This offers a rational approach to treatment by mechanical methods—either manipulation or mechanical traction. The selection of suitable cases is discussed and some of the more successful manipulative procedures are outlined.

In our hands this approach to backache has proved most gratifying and, more important, has brought comfort to a large group of patients who have not been able to achieve it before.

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RÉSUMÉ

Les manipulations peuvent souvent soulager le lumbago plus rapidement que le traitement conservateur fondé sur le repos, la sédation, les applications de chaleur ou l'anesthésie locale, mais cependant les rares médecins qui ont eu recours aux manipulations dans l'exercice de leur profession ont presque toujours senti le fagot au nez de leurs confrères. La plupart des symptômes qui répondent aux manipulations sont causés par des processus de dégénérescence. L'irritation des structures profondes du dos peut causer des irradiations. Les muscles, les ligaments, la synoviale, la dure-mère et les os peuvent donc être incriminés. Cependant les structures les plus souvent lésées semblent les articulations zygapophysaires et les disques inter-vertébraux. Les lésions de ces structures ont des répercussions douloureuses à des endroits inattendus comme l'a montré l'expérience de Feinstein. Ces manifestations atypiques ont donné lieu à de nombreux diagnostics erronés et sont à la source des prétendues guérisons mirabolantes que réclament de vulgaires tripoteurs.

Les adhérences des articulations zygapophysaires peuvent quelquefois mais rarement causer des symptômes par pincement de la synoviale. Les lésions discales sont par contre reconnues comme étant la cause de la majorité des lombalgies. Les manipulations ont un certain succès dans les cas de déplacement de l'anneau fibreux dont la consistance fibro-cartilagineuse lui permet de réintégrer sa position normale. Les auteurs comparent ces lésions à celles du ménisque du genou. Le noyau gélatineux de consistance diffuse coule de sa position normale et peut difficilement la regagner par l'effet de manipulations. La simple traction dans ce cas peut alors apporter quelque amélioration. La douleur dans ce genre de lésion provient de la pression exercée sur la dure-mère ou sur les racines nerveuses. Ces hypothèses servent bien la théorie sur laquelle s'appuient les fervents de la manipulation.

L'acceptation des ces prémisses rend le choix des cas relativement facile, car, sauf peut-être pour une posture vicieuse, une douleur lombaire chez un malade qui par ailleurs est en bonne santé élimine par le fait même la spondylose, la tuberculose, la maladie de Paget, le néoplasme et autres états de la même gravité. L'anamnèse contribue aussi à préciser l'étiologie de la lésion car les circonstances de l'apparition de la douleur selon qu'elle est brusque ou insidieuse, et sa nature même, intermittente ou continue, aident à poser le diagnostic. L'examen radiologique quoique souvent négatif devrait toujours être pratiqué. On doit se rappeler cependant qu'il n'existe aucune corrélation entre l'apparence radiologique qui reflète plutôt l'âge, l'obésité ou le travail physique et la douleur qu'accuse le malade.

Les contre-indications aux manipulations sont rares. Elles reposent surtout sur le danger de comprimer la quatrième paire sacrée. Les manipulations proprement dites comprennent l'hyperextension par pression soudaine ou prolongée sur les apophyses épineuses; la rotation par pression, la rotation directe avec ou sans point d'appui; la flexion latérale et la traction subite.

Le seul but que doit se proposer le manipulateur est de supprimer la douleur car il n'est pas question de guérir la lésion. L'aspect le plus important des suites du traitement consiste à prévenir le retour de cette douleur par l'observance de précautions ou le port de bretelle, corset ou autre prothèse semblable. Dans les douleurs dorsales sans complications le soulagement obtenu par les auteurs atteint presque 75% des cas; dans les lésions nerveuses les chances d'amélioration sont réduites de moitié. D'après les auteurs le danger des manipulations a été exagéré; cette formule de traitement ne ferait courir plus de risques au malade que l'injection de novocaïne telle que préconisée dans certains milieux.

FROZEN SECTIONS. II. VALUE IN CASES OF SUSPECTED MALIGNANCY*

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THE WIDEST USE MADE of the frozen section is in the diagnosis of suspected malignancy. Confirmation of malignancy permits the surgeon to proceed at once with definitive therapy and is therefore of material benefit to the patient in terms of reduced morbidity and, possibly, in improved prognosis.

As an extension of a previous study¹ on the accuracy and limitations of the frozen section, an attempt has been made to record and correlate the gross and frozen section diagnoses of biopsy material in the Department of Surgery at St. Paul's Hospital, Vancouver, B.C., over a period of 19 months from December 1, 1955 to June 30, 1957. In this period a frozen section examination was requested on 1218 biopsies from cases of suspected malignancy or uncertain diagnosis. This examination was performed immediately on all cases, and the surgeon determined his procedure on the basis of the frozen section diagnosis. Included in these 1218 cases are 381 cases of malignancy (31.28%).

Gross examination of the material permitted a correct diagnosis of 788 cases (72.25%), including 226 of the malignancies (59.32% of all the malignancies). In the remaining 430 cases (27.75%) the result of gross examination was inconclusive or erroneous. In 155 of the malignancies (40.68% of all the malignancies), the gross examination was not diagnostic.

Frozen section examination provided an immediate and final diagnosis of 1198 cases (98.36%), including 373 of the 381 malignancies (97.9%). An analysis of the accuracy of the gross v. frozen section diagnosis in all cases is presented in Table I.

TABLE I.

Total number of cases examined.....	1218
Accurate gross diagnosis.....	788 (72.25%)
Indefinite or inaccurate gross diagnosis.....	430 (27.75%)
Accurate frozen section diagnosis.....	1198 (98.36%)

Table II shows the relative accuracy of the gross and frozen section diagnoses in the cases of malignancy.

An analysis of the delayed and erroneous frozen section diagnoses in the 1218 cases discloses an

*The second of a series of two articles. For Part I, see *Canad. M. A. J.*, 77: 943, 1957. This study was made possible by generous grants from Mr. Robert A. Brown, Jr., Calgary, Alberta, and from the British Columbia Division of the Canadian Cancer Society.

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TABLE II.

Total number of cases of malignancy.....	381
Accurate gross diagnosis.....	226 (59.32%)
Impossible or inaccurate gross diagnosis.....	155 (40.68%)
Accurate frozen section diagnosis.....	373 (97.90%)

inability to determine the correct diagnosis in 20 cases. Of these, 5 were delayed diagnoses and 15 were actual errors in diagnosis. Of these 15 errors, 4 were due to faulty block selection and 11 were due to misinterpretation of the frozen sections (see Tables III and IV).

TABLE III.—DELAYED AND ERRONEOUS DIAGNOSES
(DECEMBER 1, 1955 TO JUNE 30, 1957)
1218 CONSECUTIVE CASES OF SUSPECTED MALIGNANCY
OR INDEFINITE DIAGNOSIS

Total number delayed and/or erroneous diagnoses	20 (1.64%)
Delayed diagnoses.....	5 (0.41%)
Erroneous diagnoses.....	15 (1.23%)
(1) Errors due to faulty block selection.....	4 (0.33%)
(2) Errors due to misinterpretation.....	11 (0.90%)

TABLE IV.—DELAYED AND ERRONEOUS DIAGNOSES

1. Delayed diagnoses.....	5
(1) Biopsy of large bowel serosa:	
Final diagnosis:	Whipple's disease
(2) Biopsy of thyroid:	
Final diagnosis:	Hashimoto's struma
(3) Biopsy of tongue:	
Final diagnosis:	Anaplastic malignancy of undetermined nature
(4) Biopsy of breast:	
Final diagnosis:	Multiple benign intraduct papillomata
(5) Stomach (subtotal):	
Final diagnosis:	Benign polyposis
2. Erroneous diagnoses due to faulty block selection.....	4
(6) Cyst of parotid:	
F.S.* diagnosis:	Simple cyst
Final diagnosis:	Cystic benign mixed tumour
(7) Prostate (transurethral):	
F.S. diagnosis:	Benign nodular hyperplasia of prostate
Final diagnosis:	Adenocarcinoma of prostate
(8) Uterine curettings:	
F.S. diagnosis:	Benign glandular hyperplasia with polyposis
Final diagnosis:	Adenocarcinoma of endometrium
(9) Uterus:	
F.S. diagnosis:	Benign cystic hyperplasia
Final diagnosis:	Localized adenosacanthoma limited to junction of cervix and uterine body
3. Erroneous diagnoses due to faulty interpretation.....	11
(10) Biopsy serosa of stomach:	
F.S. diagnosis:	Metastatic adenocarcinoma
Final diagnosis:	Foreign body granuloma
(11) Parotid gland:	
F.S. diagnosis:	Benign mixed tumour
Final diagnosis:	Malignant mixed tumour
(12) Thyroid gland:	
F.S. diagnosis:	Probable anaplastic carcinoma
Final diagnosis:	Giant cell thyroiditis
(13) Parotid gland:	
F.S. diagnosis:	Probable lymphoma
Final diagnosis:	Boeck's sarcoidosis
(14) Lymph node (scalene):	
F.S. diagnosis:	Lymphoma
Final diagnosis:	Anaplastic bronchogenic carcinoma

*F.S. = Frozen section.

- (15) Biopsy liver:
F.S. diagnosis: Portal cirrhosis
Final diagnosis: Malignant hepatoma
- (16) Lymph node (neck):
F.S. diagnosis: Non-specific lymphadenitis
Final diagnosis: Tuberculous lymphadenitis
- (17) Submaxillary salivary gland:
F.S. diagnosis: Non-specific sialitis
Final diagnosis: Boeck's sarcoidosis
- (18) Biopsy omentum:
F.S. diagnosis: Metastatic adenocarcinoma
Final diagnosis: Fat necrosis
- (19) Lymph node (neck):
F.S. diagnosis: Probable tuberculosis
Final diagnosis: Hodgkin's disease
- (20) Biopsy skin (face):
F.S. diagnosis: Carcinoma in situ
Final diagnosis: Benign keratotic papilloma

A further breakdown of all the cases into the various organs and organ-systems provides some interesting information which is summarized in Table V.

TABLE V.

Organ		Accurate gross diagnosis	Indef. or erroneous gross diagnosis	Accurate F.S. diagnosis	Delayed or erroneous F.S. diagnosis
Breast	Total cases: 327	292	35	326	1
	Malignancies 81	64	17	81	
Thyroid	Total cases: 118	88	30	116	2
	Malignancies 10	3	7	10	
Curettings	Total cases: 88	41	47	87	1
	Malignancies 14	5	9	13	
Lymph nodes	Total cases: 75	28	47	72	3
	Malignancies 25	11	14	23	
Bowel	Total cases: 69	41	28	68	1
	Malignancies 44	27	17	44	
Stomach	Total cases: 66	42	24	64	2
	Malignancies 23	16	7	23	
Skin	Total cases: 62	21	41	61	1
	Malignancies 26	10	16	26	
Ovary	Total cases: 52	41	11	52	0
	Malignancies 17	12	5	17	
Cervix	Total cases: 50	24	26	50	0
	Malignancies 10	1	9	10	
Uterus	Total cases: 43	31	12	42	1
	Malignancies 5	2	3	4	
Soft tissues	Total cases: 38	20	18	38	0
	Malignancies 9	2	7	9	
Peritoneum	Total cases: 37	20	17	36	1
	Malignancies 21	14	7	21	
Upper resp. tract and mouth	Total cases: 32	10	22	31	1
	Malignancies 9	4	5	8	
Lung	Total cases: 28	22	6	28	0
	Malignancies 18	13	5	18	
Bladder	Total cases: 27	15	12	27	0
	Malignancies 20	13	7	20	
Salivary glands	Total cases: 19	8	11	15	4
	Malignancies 7	4	3	6	
Liver	Total cases: 16	7	9	15	1
	Malignancies 7	4	3	6	
Kidney	Total cases: 13	11	2	13	0
	Malignancies 6	5	1	6	
Prostate	Total cases: 12	7	5	11	1
	Malignancies 5	4	1	4	
Pancreas	Total cases: 12	4	8	12	0
	Malignancies 4	1	3	4	
Esophagus	Total cases: 9	3	6	9	0
	Malignancies 7	3	4	7	
Gallbladder	Total cases: 9	5	4	9	0
	Malignancies 3	2	1	3	
Bone	Total cases: 7	1	6	7	0
	Malignancies 5	1	4	5	
Brain	Total cases: 5	3	2	5	0
	Malignancies 3	3	0	3	
Testicle	Total cases: 4	3	1	4	0
	Malignancies 2	2	0	2	

DISCUSSION

Of all the tissues removed, only 72% of the specimens could be diagnosed correctly on gross examination as opposed to approximately 98% accuracy of diagnosis by frozen section method.

With regard to the accuracy of the method, it is our opinion that despite the experience of the pathologists there will always be a small margin

of erroneous diagnosis by the frozen section method. In the first place this margin of error is inherent in the frozen section technique in that it does not lend itself to multiple block or serial tissue examination. Serial sections are often required by the pathologist in order that the final diagnosis in certain cases can be made; therefore the pathologist will be confronted, from time to time, with cases in which the interests of the patient will best be served by delaying the diagnosis until serial section of multiple blocks can be carried out by the routine hæmatoxylin and eosin (H. & E.) method. In our first series previously reported, the percentage of these cases was 0.6. In the present series 0.41% of cases were deferred for serial section by the H. & E. method.

In the first publication, 0.48% of erroneous diagnoses resulted from faulty block selection. In the present series this error was reduced to 0.33%. Considering the cases in which errors are made because of faulty block selection and/or because serial sections are advisable, it is reasonable to assume that approximately 1% of cases cannot be diagnosed accurately because of deficiencies inherent in the technique.

ERRORS OF INTERPRETATION

Considering that there was a 0.96% error in the first series, and a 0.90% error in the interpretation of the frozen sections in the second series, it is evident that some analysis of this relatively constant error is required. Reference to Table IV confirms an impression gained previously that the greatest difficulty lies with the granulomata. Of the 11 errors in this group, six were due to our inability to recognize a typical granulomatous giant cell reaction in the sections. The polychrome stain, while providing excellent nuclear definition and detail, stains cytoplasm only very lightly and often fails to identify cell membranes. Thus, of all the cases in which errors were due to faulty interpretation, more than half were due to our inability to recognize multinucleated giant cell formations and epithelioid cells. Having recognized the difficulty of establishing diagnoses in the granulomata, we have been able to compensate in some measure for this defect and have recently obtained correct diagnoses in two cases of sarcoidosis, one of fat necrosis and one of tuberculosis.

The most frequent request made was for a rush diagnosis on a biopsy of breast. Of 327 such cases, 81 were malignant—an average of one malignancy in four breasts biopsied. Of the 81 cases, 17 could not be diagnosed on gross examination with a degree of certainty which would warrant radical surgery. One breast biopsy showed a marked papillary change in the ductile epithelium and was deferred for serial section by the H. & E. method. The case was finally diagnosed as one of multiple benign intraduct papillomata.

With regard to the thyroid gland, the procedure most frequently requested is examination of a thyroid adenoma. There were 118 thyroid biopsies including 10 malignancies—an incidence of almost one in 12 admissions for possible malignant thyroid adenoma. Of these thyroid carcinomas only three could be diagnosed on gross examination and all were diagnosed successfully by frozen section technique. There were two cases of thyroiditis in which the frozen section failed to reveal the diagnosis.

In 88 cases, frozen section examination was requested on uterine curettings. In all of these cases there was some suspicion of possible malignancy. The patients were in the menopausal or post-menopausal age group, and of the 88 cases 14 proved to be carcinoma. Thirteen of these were successfully diagnosed by the frozen section technique and in all 13 cases radium insertion was carried out immediately.

Of 75 lymph nodes examined, 25 were malignant. Of these, only 23 could be diagnosed definitely as malignant by the frozen section technique. Of all the lymph nodes examined, 72 of the 75 were correctly diagnosed. The method appears to be admirably suited to the diagnosis of metastatic malignancy, but, in our hands at least, is not too readily adapted to the diagnosis of primary low-grade lymphomata. The classical follicular architecture of a normal lymph node as seen in the H. & E. sections is not strikingly evident on the frozen sections as a rule, and loss of nodal architecture in the lymphomata does not show sufficient deviation from the normal to provide an accurate estimation of malignancy. The more malignant lesions, however, present no particular problem.

Of 44 malignant lesions of the bowel, all were diagnosed correctly. It is interesting to note that of the total number (69) of bowel biopsies, more than two-thirds were malignant.

The application of the frozen section to cervical biopsy material is limited. It is relatively easy to confirm the suspected diagnosis of carcinoma-in-situ by the frozen section method, but it is impossible to prepare adequate numbers of sections to establish with any degree of certainty that the lesion is not invasive. For this reason we no longer do rapid sections on these cases. If on the other hand there is a visible lesion that can be biopsied, an immediate diagnosis of infiltrating squamous cell carcinoma by the frozen section method permits immediate therapy to be instituted while the patient is anaesthetized.

As Table IV demonstrates, some difficulty was encountered with lesions of the salivary glands. Of 19 biopsies of salivary gland, only 15 were diagnosed correctly by the frozen section technique. Two cases of sarcoidosis were misdiagnosed, one mixed tumour was missed altogether and one tumour was labelled "benign" which later proved to be malignant.

The misinterpretation of a benign lesion as malignant is conceded to be the most hazardous error which can be made, since, more frequently than not, extensive surgery is undertaken as a result. Cases 10, 12, 13, 18 and 20 were labelled "malignant" by frozen section and all later proved to be benign. Fortunately there were no serious sequelae in these cases. In Case 10 there was known to be an adenocarcinoma of the ovary and subsequently the patient developed a duodenal deformity. The frozen sections suggested secondary malignancy and this erroneous diagnosis led to gastro-enterostomy, whereas gastrectomy would have been the preferable procedure in the surgeon's opinion. In Case 12 a total thyroidectomy was performed, the whole gland being involved in the inflammatory process and bound down to the trachea. The clinical condition of the patient preoperatively indicated a marked hypothyroidism with partial tracheal obstruction, and removal of the gland was indicated whether it had been malignant or not. In Case 18 palliative by-passing operation supplanted a resection, the operation of choice. Case 13 was not influenced significantly by the mistake in diagnosis. Case 20 was an excision biopsy and frozen section was requested to determine whether the lesion had been completely removed.

CONCLUSIONS

On the basis of 1218 consecutive cases of suspected malignancy and/or uncertain diagnosis, we are still of the opinion that the frozen section with its immediate diagnosis offers a very real opportunity to improve the management of a significant percentage of these patients.

An accurate gross diagnosis was possible in only 72.25% of these cases, whereas the correct frozen section diagnosis was possible in 98.36%.

The technique is particularly suited to the diagnosis of primary malignancy in the breast, thyroid, endometrium, gastro-intestinal tract, skin, ovary, urinary tract, brain and lung. It lends itself well to the diagnosis of secondary malignancy in all organs, especially lymph nodes.

It is not suitable in cases of suspected carcinoma-in-situ of the cervix and, in our hands at least, is quite unreliable in the diagnosis of low-grade lymphomas. Salivary gland tumours are difficult to assess in terms of malignancy.

An analysis of the accuracy of the gross and frozen section diagnoses in various organs has been presented.

The authors acknowledge with gratitude the technical services of Mrs. Margaret Ellison and Mrs. Marilyn McCarthy.

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RÉSUMÉ

Le numéro du 15 novembre 1957 de ce journal contenait les résultats d'une enquête menée au sujet des coupes par congélation. La communication que voilà offre la deuxième tranche de ce travail.

De son application à 1218 cas consécutifs où l'on soupçonnait le néoplasme ou dont le diagnostic était obscur, il ressort que l'examen histologique extemporané offrit l'occasion d'améliorer la conduite du traitement chez un bon nombre de malades. L'examen macroscopique ne permit de poser le diagnostic que dans 72.25% des cas alors que les coupes par congélation atteignirent une précision diagnostique de 98.36%.

Les lésions qui se prêtent le mieux à cette technique sont les néoplasmes du sein, de la thyroïde, de l'endomètre, des voies gastro-intestinales et urinaires, de la peau, des ovaires, du cerveau et du poumon. Elle peut également s'appliquer à toutes les métastases et particulièrement à celle des ganglions lymphatiques, mais n'offre que peu d'intérêt dans les cas où l'on soupçonne le cancer *in situ* du col ou, toujours d'après les auteurs, dans le diagnostic des lymphomes indolents. La malignité des néoformations des glandes salivaires est difficile à établir. Une comparaison du degré de précision diagnostique de l'examen macroscopique et de l'examen histologique extemporané termine cet article.

PITYRIASIS CAPITIS (DANDRUFF) A CLINICAL EVALUATION OF THREE REMEDIES CURRENTLY EMPLOYED IN THE PROPHYLAXIS AND TREATMENT OF A COMMON SCALP DISORDER

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THE TROUBLESOME, persistent, irritating and annoying complaint known as dandruff is familiar to both the specialist in dermatology and the general practitioner. This common condition of the scalp is characterized by the presence in greater or lesser quantity of dry, white scales which, after the hair is brushed, fall on to the clothing, the shoulders and other parts of the body.

ETIOLOGY

It was previously believed that the pityrosporon of Malassez (*Pityrosporum ovale*), a lipophilic pleomorphic fungus allied to the monilias, was the cause of dandruff and of seborrhœic eruptions. The recent work of Martin-Scott³ has thrown considerable doubt upon this concept, and the pityrosporum is now regarded in the light of a harmless saprophyte. The white scales are believed to be simply flakes produced in excess from the horny layers of the skin, and arising probably as a protective response to low-grade infection.

It has frequently been noted that many patients with dandruff have a low basal metabolic rate and consume excessive quantities of sweets, starches and fats, alcoholic drinks, chocolate, cream, butter or milk. These items appear to aggravate the complaint and there is evidence that in certain instances a deficiency of vitamin B may exist. In some the disease appears to represent a "sensitization" response to a low-grade infection from staphylococcal and streptococcal organisms, and it is well known that the bacillus of acne and *Staphylococcus epidermidis albus* may be found in the scales as well as the pityrosporon.

PATHOLOGY

When stained, the scales of dandruff are frequently found to contain groups of spores of varying shapes—oval, round, dumb-bell or gourd-shaped. This organism is the pityrosporon of Malassez and its disposition within the scales is similar to that of *Microsporon furfur* in pityriasis versicolor. In association with the pityrosporon are found the bacillus of acne and *Staphylococcus epidermidis albus*.

The condition is sometimes termed "seborrhœic", since it was believed by Hebra that these individual scales were composed of dried sebum. The investigations of Sabouraud revealed that in all cases these scales are composed of horn cells and that even when they appear greasy, the moisture is due not to sebum but to serum. An especially greasy skin is not essential for their appearance, even though it is commonly found that dandruff occurs in patients who have actual seborrhœa.

The pathological and histological findings are those of a low-grade inflammatory process.

CLINICAL FEATURES

Upon the scalp, the least severe phase is known as *pityriasis sicca* and takes the form of a dry, branny, flaky desquamation accompanied by a profuse number of fine powdery scales. At first confined to small patches, the condition spreads rapidly to involve larger areas. *Pityriasis steatoides*—an oily type of dandruff—may or may not be associated with erythema and an accumulation of thick crusts. Characteristically commencing on the vertex and frontal region, there is a tendency for the hair of the affected part to fall out, with progressive recession thereafter. This type of dandruff is often associated with premature baldness in men. More extensive and severe "seborrhœic" eruptions are encountered with widespread greasy scaling patches, exudations, crustings and even psoriasiform eruptions. In extreme cases the entire scalp is covered with a dirty greasy crust having an offensive odour. *Cradle cap* is the name given to the condition in infancy clinically associated with accumulated epithelial debris and brownish-yellow scaling lesions on the scalp.

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DIAGNOSIS

In my experience the two principal diseases which may be confused with dandruff are: (1) psoriasis; (2) tinea capitis (in children).

1. In psoriasis there may be a diffuse involvement of the whole scalp; alternatively, and more commonly, several distinct patches occur. Psoriasis patches always have sharp, definite edges; patches of dandruff have indefinite margins which tend to fade away imperceptibly into normal skin. Naturally, when the whole scalp is involved, these features show only at the margin of the hairy scalp. "Corona psoriatica", a less commonly encountered form, is characterized by a red-festooned border to the hair margin on the forehead. An examination of the rest of the body frequently reveals the typical lesion of psoriasis with its sharply defined patch of erythema covered by silvery scales, which, when scraped off, reveal a classical picture of small bleeding points at the exposed tops of the underlying capillary loops.

2. Tinea capitis may be differentiated by the presence of dull broken hairs which fluoresce under Wood's light. The finding of the fungus by microscope clinches the diagnosis. Secondary syphilis may rarely manifest itself as papules appearing closely set on the forehead—the so-called "corona veneris". A complete examination of the subject should reveal other signs of syphilis, and the Wassermann reaction is positive in most instances.

Should the disease take on a more acute phase (seborrhoeic dermatitis), there will be areas of erythema and painless weeping. This is probably due to secondary infection, and the disorder then has to be differentiated from acute or chronic streptococcal dermatitis of the scalp and lupus erythematosus.

In the differential diagnosis from seborrhoeic dermatitis, pityriasis rosea may cause confusion. It has a characteristically symmetrical distribution and develops quite rapidly to produce the clinical picture. Psoriasis may at times require exclusion whilst lupus erythematosus is differentiated by the presence of dry scales, a sharp outline, a butterfly pattern and horny plugs. Moniliasis, syphilis and neurodermatitis must also be considered.

COMPLICATIONS

There is a tendency for dandruff to spread from the scalp to the ears and on to the neck. Associated dry scaly areas are often found on the face. Common complications are furunculosis, impetigo and fissures of the post-auricular folds, the corners of the lips and the nares. The patient with dandruff is liable to lose his hair on the temples and vertex at an early age. Pre-existing acne is often aggravated by an associated pityriasis capitis, and a low-grade bilateral conjunctivitis may also exist as a result of the scales falling into the eyes.

The occurrence of seborrhoeic dermatitis or seborrhoeic eczema—sheets of red, inflamed, weep-

ing skin on the scalp, neck and flexures—probably represents a "sensitization dermatitis" due to the skin's having become sensitized to the organisms.

TREATMENT — LOCAL

Dandruff is undoubtedly an infectious condition and hairdressing establishments represent a potent source of infection. Those patients fortunate enough to have escaped dandruff in infancy usually succumb to the attentive ministrations of the average hairdresser, whose methods are frequently those most calculated to transfer the infection (via the medium of contaminated brushes and combs) from one customer to the next.

PERSONAL OBSERVATIONS OF BENZALKONIUM
CHLORIDE PRODUCTS

Since my arrival in Canada in 1955 I have treated many patients suffering from dandruff. At first I relied upon the solutions recommended by Roxburgh⁶ in his excellent book "Common Skin Diseases". Here the head is washed thoroughly with spirit soap or with soapless shampoo and—preferably—soft water, once or twice a week. Thereafter the following lotion is applied each night or morning. It is shaken on all over the head and well brushed in.

R Salicylic acid.....	4.0	gr. XX.
Mercury perchloride.....	0.1	gr. ½
Castor oil.....	1.0	m V.
Oil of lavender.....	1.0	m V.
Rubbing alcohol to.....	100.0	℥ —

For men the lotion may be made into a brilliantine by increasing the castor oil to 30 minims or more. Solutions made up for women should not contain castor oil, and if the woman has very fair or white hair the mercury perchloride should also be omitted since it has a tendency to darken the hair (particularly when permanent waving is undertaken).

Although I obtained many successes with this solution I felt conscious of its limitations—especially when using it on women. Men tolerated it well but the more sensitive scalps of women often reacted to this lotion and on occasion the patient complained of stinging and discomfort of sufficient degree to prevent her continuing treatment. Attempts to modify the solution led to disappointment and a falling off of results. An additional disadvantage lay in the need for this lotion to be employed for an indefinite period. Rubbing alcohol requires a fresh prescription for each bottle and although both eau de Cologne or bay rum could be substituted, it was my experience that they did not hold the castor oil in solution.

For these reasons a change was made to selenium sulfide shampoo suspension. Fair results were obtained and the clinical impression was formed that this type of shampoo had a characteristic odour, was rather messy, sometimes disagreeable

to the patient, and likely to make the hair oily, even when not used excessively.

Although satisfactory results had been obtained with the foregoing, it seemed that each had disadvantages rendering it unacceptable for continual use. What I sought was a product cosmetically acceptable, non-greasy and non-irritant to the scalp which would rapidly control the condition. Volume 2 of "New Products Index"⁴ covering pharmaceutical specialties marketed in Canada up to July 15, 1956, listed details of Sabol, a product which appeared to fulfil all criteria. Subsequently I wrote to the company to request trial samples. In the evaluation that followed, patients were divided into three groups of 34 patients per group, treated with: (a) the salicylic acid lotion; (b) a proprietary preparation containing selenium sulfide; (c) Sabol.

The results of investigations of these 102 patients are summarized in Tables IIA, IIB and IIC, whilst Table I represents a yardstick for evaluating these tables. For example, dandruff of moderate degree, brought under control within eight days, was recorded in Table I as showing "rapid improvement". Conversely, severe dandruff requiring treatment

TABLE I.—PITYRIASIS CAPITIS (DANDRUFF)—
CLASSIFICATION OF RESULTS OF TREATMENT

	Mild degree	Moderate degree	Severe degree
Rapid improvement.....	4 days	8 days	12 days
Moderate improvement...	6 days	12 days	18 days
Slow improvement.....	10 days	20 days	30 days
	+	+	+

for 30 days or longer before being brought under control was evaluated as "slow improvement".

In connection with the foregoing Tables IIA, IIB and IIC, it should be noted that:

1. No particular remedy was reserved for any particular type of case. Patients as they attended were allotted remedies in sequence. For example, the first patient in this survey of 102 cases was treated with salicylic acid lotion, the second with selenium sulfide, and the third with Sabol, whilst the fourth patient in the series reverted to salicylic acid lotion.

2. Each of the Tables IIA, IIB and IIC elaborates principally results on males. This was unavoidable as the whole assessment was carried out at a Royal Canadian Air Force Station.

TABLE IIA.—SALICYLIC ACID LOTION

Total No. of patients	Patients	Improvement				Degree of pityriasis capitis	Side effects	Comments	
		None	Slow	Mod.	Rapid				
34 men	Male	1		x		Severe	Stinging of scalp	Male One man complained of stinging of scalp.	
		2			x	Moderate			
		3			x	Severe			
		4			x	Mild			
		5		x		Moderate			
		6			x	Severe			
		7			x	Severe			
		8			x	Moderate			
		9		x		Moderate			
		10			x	Moderate			
		11			x	Mild			
		12			x	Moderate			
		13			x	Mild			
		14			x	Moderate			
		15			x	Mild			
		16			x	Moderate			
		17		x		Moderate			
		18		x		Severe			
		19			x	Severe			
		20			x	Moderate			
		21			x	Mild			
		22		x		Moderate			
		23				x			Severe
		24				x			Moderate
		25				x			Mild
		26				x			Mild
		27				x			Mild
		28				x			Severe
		0	6	12	10				
6 women	Female	1			x	Severe	Stinging of scalp	Female All women improved rapidly. Two women patients complained of stinging of scalp.	
		2			x	Severe			
		3			x	Severe			
		4			x	Severe	Stinging of scalp		
		5			x	Severe			
		6			x	Severe			
		0	0	0	6				

ASSESSMENT—Good.

A rather crude but effective preparation; effective in all cases surveyed.
Liable to cause stinging of the female scalp.

TABLE IIB.—SELENIUM SULFIDE

Total No. of patients	Patients	Improvement				Degree of pityriasis capitis	Side effects	Comments
		None	Slow	Mod.	Rapid			
34 men	Male	1		x		Severe	Excessive oiliness	Three men complained of excessive oiliness.
		2		x		Moderate		
		3			x	Moderate		
		4			x	Moderate		
		5			x	Severe		
		6			x	Moderate		
		7		x		Moderate		
		8			x	Moderate		
		9			x	Moderate		
		10		x		Moderate		
		11			x	Moderate	Excessive oiliness	
		12			x	Mild		
		13			x	Mild		
		14		x		Moderate		
		15		x		Moderate		
		16			x	Severe		
		17			x	Moderate		
		18			x	Moderate		
		19			x	Severe		
		20		x		Moderate		Excessive oiliness
		21			x	Moderate		
		22				Mild		
		23			x	Moderate		
		24			x	Moderate		
		25				Moderate		
		26			x	Moderate		
		27			x	Severe		
		28			x	Moderate		
		0	6	20	2			
6 women	Female	1		x		Severe	Considered by patient to be "messy".	One woman considered it messy.
		2		x		Severe		
		3			x	Moderate		
		4	x			Moderate		
		5		x		Moderate		
		6			x	Mild		
		1	3	2	0			

ASSESSMENT—Fair.

The least effective of the three preparations surveyed. Liable to cause excessive oiliness of the scalp during treatment.

EVALUATION OF RESULTS

Salicylic acid lotion (Table IIA).—The total of 34 patients was composed of 28 men and 6 women. Of the men, 8 had a severe degree, 13 a moderate degree and 7 a mild degree of pityriasis capitis. All responded to salicylic acid lotion; 10 men (35.7%) responded rapidly, 12 (42.8%) moderately and 6 (21.4%) slowly. Of this series of 28 male patients, only one recorded discomfort and stinging of the scalp when applying the solution. It is interesting to note that the 6 women all had a severe degree of pityriasis capitis and all responded rapidly to salicylic acid lotion. Two women of the series of 6 complained of stinging of the scalp. It is thought that the more rapid control of the complaint in women was, in part, attributable to higher standards of personal hygiene and cleanliness and more conscientious carrying out of instructions.

Proprietary product containing selenium sulfide (Table IIB).—The total of 34 patients was composed of 28 men and 6 women. Of the men, 5 had a severe degree, 20 had a moderate degree and 3 a mild degree of pityriasis capitis. All responded to the proprietary product containing selenium sulfide. Two men patients (7.1%) responded

rapidly, 20 (71.4%) moderately and 6 (21.4%) slowly. Of the series of 28 men three (10.7%) complained of excessive oiliness; two of these had a moderate degree of pityriasis capitis, one a severe degree. Of six women also treated, two had a severe degree, three a moderate degree and one a mild degree of pityriasis capitis. Of these six patients one failed to respond to treatment. Of the remainder, two responded moderately well and three responded slowly; none responded rapidly. One of the series (with a moderate degree of pityriasis capitis) complained of the irritation of the proprietary product.

Proprietary product containing benzalkonium chloride (Sabol) (Table IIC).—Of the 34 patients 30 were men. Of the latter, eight had a severe degree, 18 a moderate degree and four a mild degree of pityriasis capitis. All responded to the proprietary product containing benzalkonium chloride (Sabol); 15 (50%) responded rapidly, 14 (46.6%) moderately and one (3.3%) slowly. None of the men complained about this preparation. Four women were also treated; one had a severe degree, the remainder a moderate degree of pityriasis capitis; in two cases response to Sabol was rapid and in two moderate.

TABLE IIC.—BENZALKONIUM CHLORIDE (SABOL)

Total No. of patients	Patients	Improvement				Degree of pityriasis capitis	Side effects	Comments		
		None	Slow	Mod.	Rapid					
34 30 men	Male	1		x		Moderate		Male No adverse side effects.		
		2			x	Mild				
		3			x	Moderate				
		4			x	Moderate				
		5			x	Moderate				
		6				x	Severe			
		7			x		Severe			
		8				x	Severe			
		9				x	Moderate			
		10			x		Mild			
		11				x	Moderate			
		12				x	Moderate			
		13				x	Moderate			
		14			x		Moderate			
		15			x		Severe			
		16				x	Moderate			
		17			x		Severe			
		18			x		Moderate			
		19				x	Moderate			
		20				x	Mild			
		21				x	Severe			
		22				x	Severe			
		23				x	Moderate			
		24				x	Moderate			
		25				x	Severe			
		25				x	Severe			
		26					x		Moderate	
		27					x		Moderate	
		28					x		Moderate	
		29					x		Mild	
30				x		Moderate				
		0	1	14	15					
4 women	Female	1		x		Moderate		Female No adverse side effects.		
		2			x	Moderate				
		3			x	Moderate				
		4			x	Severe				
		0	0	2	2					

ASSESSMENT—*Very good.*

The most effective preparation of all—cosmetically acceptable, non-greasy and non-irritant.

No adverse side effects encountered in the group of patients surveyed.

All patients (male and female) responded to treatment, the majority demonstrating a rapid improvement—even in cases classed as "severe".

CONCLUSIONS

A. *Proprietary product containing benzalkonium chloride.*—Analysis of Table IIC supports the clinical impression that the product Sabol is not only the most effective but also the most aesthetically acceptable of the three preparations evaluated. All male and female patients responded to treatment, the majority showing a rapid improvement even in cases classed as "severe"; only one (3%) responded slowly. None of the men or women had any complaints to make concerning the preparation. It is interesting to note that the female patient, a Royal Canadian Air Force nursing sister, classed as having severe pityriasis capitis, had previously employed a selenium sulfide preparation for three months without relief. Response was moderately rapid when she changed over to the proprietary product containing benzalkonium chloride (Sabol). Continuing use of this product revealed one mild disadvantage in everyday use, its liability to set up a low-grade conjunctivitis if it gets into the eyes. This does not often occur, as the container carries instructions in French and English caution-

ing the patient to keep the solution out of the eyes and to rinse them out at once with water if it should accidentally gain entrance. The container also carries detailed directions for application of the solution. The hair is first wetted thoroughly and between $\frac{1}{4}$ and $\frac{1}{2}$ oz. of the solution is massaged into the scalp for 2-3 minutes. After rinsing, the procedure is repeated, a final rinse is made and the hair dried and brushed. In practice it is important to advise the patient that he will not work up a good shampoo until he has rinsed the hair a second time and made a further application of the solution. If this is not done, he will use excessive quantities of the solution and will experience much difficulty in working up a good lather. The patient should also change the water in the basin before finally rinsing the hair. As pityriasis capitis often flares up after a visit to a hairdresser, patients should shampoo their hair with Sabol at the earliest convenient time after one of these visits, preferably within the first 12 or 24 hours.

B. *Salicylic acid lotion.*—The evaluation would suggest that this rather crude but effective prepara-

tion is more effective in women than men. Unfortunately it is liable to cause stinging and irritation to the female scalp. The better results obtained with women may in part have been attributable to higher standards of personal hygiene and their more conscientious carrying out of instructions.

C. Proprietary product containing selenium sulfide.—This preparation appeared to be the least effective of the three. Although all men responded to treatment, only two responded rapidly and the majority improved only moderately rapidly, or slowly. Three patients (two with a moderate degree and one with a severe degree of pityriasis capitis) complained of excessive oiliness of the scalp during treatment. One of the six women failed to respond at all, and no woman responded rapidly to treatment. One patient complained of the messiness of the preparation.

Local treatment.—This has been dealt with to some extent in the evaluation of the three foregoing remedies. From time to time the disease may take on a more acute phase (seborrhœic dermatitis) with areas of erythema and even weeping. It is possible that these acute outbreaks are due to secondary infection. It has been noted for some years²⁻⁵ that cetrimide appears to be an effective application in cases of seborrhœa and recently, within the United Kingdom, the Pharmaceuticals Division of Imperial Chemical Industries Ltd. have introduced under the trade name Cetavlon P.C. (P.C. = pro capite), a lotion concentrate containing 17.5% cetrimide as an active principle. Speirs and Brotherwood⁷ reported the effect of this preparation on 26 cases taken from their practice in south-east London, and concluded that Cetavlon P.C. was an effective, safe and pleasant preparation for use against seborrhœic-dermatitis.

It is well known that seborrhœic dermatitis as a complication of pityriasis capitis often benefits from ultraviolet light. In such instances it is advantageous to wash the scalp on the day before application, with mild erythema exposures given thereafter at intervals of five to seven days to the top and sides of the scalp.

General treatment.—Within recent years the value of constitutional measures in the treatment of pityriasis capitis has been questioned, and frequently it is held that such measures are of no value whatsoever. It is my own impression that general measures have a very definite place in the over-all treatment of this troublesome condition. Many patients with pityriasis capitis or frank seborrhœic dermatitis have low basal metabolic rates, or on questioning admit to consuming an excess of carbohydrates, fats or alcohol. In some instances a deficiency of vitamin B has also been noted. It is therefore my practice to supplement local treatment with general measures. Alcohol, chocolate and large amounts of cream, butter, milk and sweets are forbidden, and any suspected vitamin B deficiency is rectified. In severe cases

the patient is also advised to avoid activities which increase perspiration and sebaceous activity.

SUMMARY

The problem of pityriasis capitis is surveyed. A discussion of the etiology of the condition is followed by an account of the pathology, clinical features, diagnosis, and complications of this annoying complaint. Local and general treatment are considered, and the scope and value of the latter are considered in relation to the former. Mention is made of the effectiveness of benzalkonium chloride in local treatment, and results of personal investigations are elaborated.

The opinions expressed in this paper are those of the author and do not necessarily reflect the views of the R.C.A.F. I acknowledge gratefully the ready co-operation received from Frank W. Horner Ltd. and their kindness in forwarding me samples for clinical appraisal. My gratitude is also extended to Squadron Leader P. Laird Gibbs, M.D., Senior Medical Officer, R.C.A.F. Station, Goose Bay, Labrador, for his encouragement and advice in the compiling of this work.

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RÉSUMÉ

Les pellicules sont composées de cellules de la couche cornée qui se détachent de l'épiderme par l'action d'un processus infectieux à bas bruit contracté le plus souvent dans les salons de coiffure. Le pityriasis sec et le stéatoïde envahissent peu à peu le cuir chevelu et mènent à la calvitie précoce. Le diagnostic différentiel de cette affection comporte le psoriasis et le tinea capitis. Les complications qu'elle peut entraîner comportent la furonculose, l'impétigo, les fissures des plis post-auriculaires, des coins du nez et des lèvres.

Dans sa recherche d'un traitement satisfaisant l'auteur fit l'essai d'une formule à base d'acide salicylique, de perchlore de mercure, d'huiles de ricin et de lavande, le tout dissous dans l'alcool à friction. Cette préparation demande un usage prolongé et produit une sensation de brûlure sur une peau irritée. Il passa ensuite à l'emploi d'une solution de sulfure de sélénium dont les propriétés thérapeutiques n'étaient pas suffisantes à faire accepter l'odeur caractéristique et la tendance à rendre la chevelure huileuse. Une solution de chlorure de benzalkonium vendue dans le commerce sous le nom de Sabol (*marque déposée*) donna les meilleurs résultats avec le moins d'inconvénient. Les cas les plus rebelles s'améliorèrent rapidement. L'auteur met les malades en garde contre la conjonctivite qui peut résulter du contact de ce produit avec les yeux. Il fait aussi mention de l'emploi d'une lotion à base de cetrimide (17.5%) vendue sous le nom de Cetavlon (*marque déposée*). En plus du traitement topique, l'amélioration de l'état général, la correction d'un métabolisme basal insuffisant et l'observance d'un régime approprié enrichi de vitamin B peuvent contribuer au bien-être du sujet et ne doivent pas être négligés.

Case Reports

LOW INSERTION OF THE TRICUSPID VALVE AND TRICUSPID INCOMPETENCE*

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ISOLATED MALFORMATIONS of the tricuspid valve are rare. The heart described below illustrates a combination of Ebstein's anomaly of low insertion of the tricuspid valve and gross enlargement due to tricuspid incompetence.

MATERIAL

The heart is that of a stillborn female infant, weight 2970 grams, who died two days before the onset of labour. The pregnancy had been uneventful and there had been no known exposure to rubella or other infection. No extracardiac malformation was found in the infant.

The heart weighs 51 g. after being fixed in 10% formalin solution, and this enlargement is due to hypertrophy and dilatation of the right auricle and ventricle (Figs. 1 and 2). The left auricle and ventricle

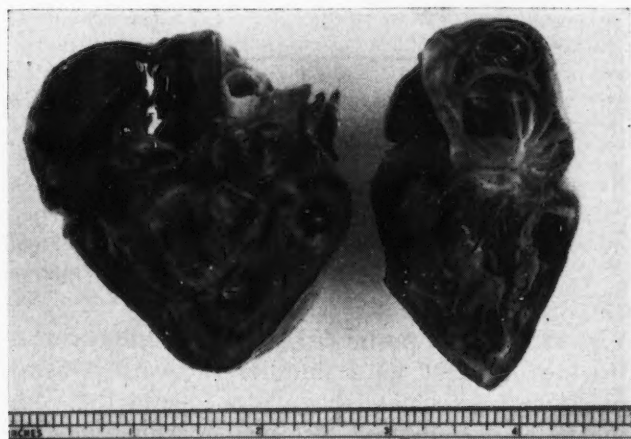


Fig. 1.—Photograph of the heart. The anterior walls of the right auricle and ventricle have been removed and are shown on the right of the heart. A rod 3.5 cm. long is placed behind the malformed cusp.

are only slightly enlarged. The cavity of the right auricle has an average diameter of 3.0 cm. The right ventricle is 3.5 cm. long and its greatest diameter is 3.0 cm. The wall of the right auricle is from 0.1 to 0.4 cm. thick, and the wall of the right ventricle 0.3 to 0.5 cm. thick. The mitral, aortic and pulmonary valves are normal. There is no coarctation of the aorta or other malformation of the great vessels. The ductus arteriosus and the foramen ovale are patent. The right auricle has a well-formed crescentic valve in the normal position over the orifice of the inferior vena cava. The ostium of the coronary sinus is also covered by a normal membranous valve.

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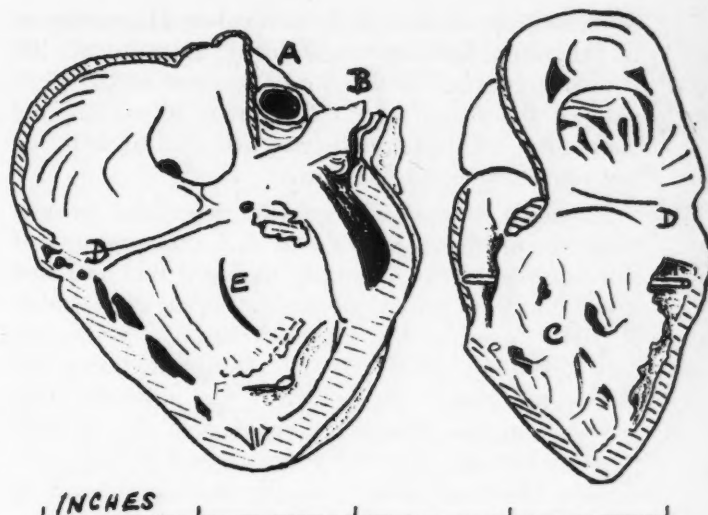


Fig. 2.—Diagram of the heart. A—the aorta, B—pulmonary artery, C—malformed cusp, D—valve ring, E—posterior limit of interventricular septum, F—moderator band.

The fibrous valve ring between the right auricle and ventricle is situated normally but is dilated, its circumference being 5.3 cm. There is a spherical sub-endocardial hæmatoma 0.2 cm. in diameter over the valve ring adjacent to the membranous part of the interventricular septum. The valve between the right auricle and ventricle has a single malformed cusp in the position normally occupied by the anterior and the right (or inferior) cusps of the tricuspid valve. The upper margin of this single cusp arises from the valve ring. The left margin is attached to the interventricular septum for a distance of 0.6 cm., beyond which it has a free edge 1.5 cm. long. The lower margin of the cusp blends with the chordæ tendineæ and shortened papillary muscles near the apex of the right ventricle. The right margin is adherent to the wall of the right ventricle parallel to and 0.6 cm. from the posterior end of the interventricular septum. The cusp forms an irregular and sacculated sheet of tissue which bridges over and blends with the chordæ tendineæ and papillary muscles.

In the position of the septal cusp of the tricuspid valve, there is thickening of the endocardium over the interventricular septum and a narrow membrane extends from this septum to the moderator band on which it terminates as a row of nodules.

Between the infundibulum and the anatomical right ventricle there is an oval channel 1.0 cm. in diameter. The posterior wall of this is the infundibulo-ventricular crest, and the anterior wall is the left free edge of the single malformed cusp.

DISCUSSION

In the normal heart the anterior cusp of the tricuspid valve is between the valve orifice and the infundibulum. The blood flow in the ventricle is around the lower margin of this cusp. In the heart described in this paper the cusp extends from the valve ring to the lower end of the right ventricle and is tethered on the right side; therefore blood cannot flow around the lower end of the cusp but must pass through the channel between its left margin and the infundibulo-ventricular crest. The cusp is tethered to the wall of the ventricle and

does not appear able to act as a valve. The existence of functional incompetence during intrauterine life is also suggested by gross enlargement of the right side of the heart which is known to accompany congenital tricuspid incompetence due to tethered but normally situated cusps.¹⁻³

Ebstein's anomaly is usually described as low insertion of the tricuspid valve. Descriptions and illustrations of this anomaly indicate that the low insertion refers principally to the septal cusp which is partly fused to the interventricular septum and may terminate as a narrow membrane near the moderator band. By contrast the anterior cusp arises from the fibrous valve ring in the normal position between the valve orifice and the infundibulum. The right cusp is usually in an intermediate position.^{4, 5}

The development of the tricuspid valve in the human embryo has been described by Odgers.⁶ The valve develops from swollen endocardial cushions in which muscle of the ventricle is incorporated (Fig. 3). Subsequently the cushions are under-

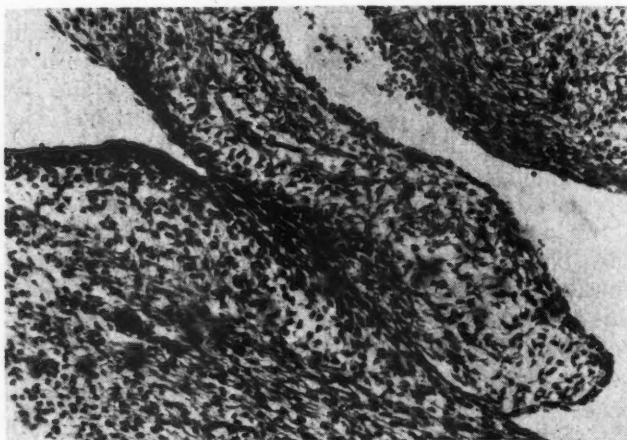


Fig. 3.—Photomicrograph of developing atrioventricular valve in a 4.3 cm. human embryo. In the lower half of the photograph the cusp is represented by a thickening of the endocardium. In the upper half the cusp is undermined. Haematoxylin and eosin stain $\times 80$.

mined and the muscle partly replaced by collagen fibres. In this way the cushion becomes a bridge which differentiates into cusps, chordae tendineae and papillary muscles.

The tricuspid valve does not originate as a circular ring of endocardial cushion tissue. The anterior and right cusps arise separately and earlier than the septal cusp. The lower end of the right bulbar ridge overhangs the valve orifice and gives rise to the anterior and right cusps.⁷ The septal cusp originates in the inferior endocardial cushion which overrides the interventricular septum (Fig. 4).

Incomplete differentiation of the muscular bridges results in tethering of the cusps as in congenital tricuspid incompetence. Ebstein's anomaly is probably caused by failure of undermining of the septal cusp and incomplete differentiation of the anterior and right cusps.

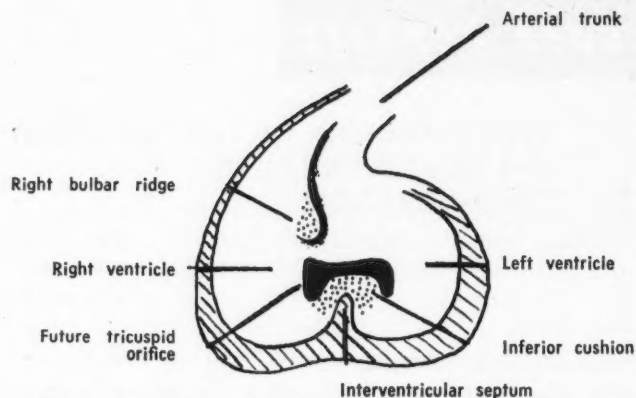


Fig. 4.—Diagram of the heart of a six-week embryo. This diagram is modified from one in Sir Arthur Keith's Schorstein Lecture 1924.

SUMMARY

An example of Ebstein's anomaly of the tricuspid valve is described. An account is given of the probable development of this condition.

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CIRRHOSIS OF THE LIVER IN A YOUNG WOMAN

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A RECENT CASE of portal cirrhosis in a young woman provides interest in a number of ways. Gastro-intestinal tract hæmorrhage was among the complications encountered, as well as hæmatological problems of thrombocytopenia associated with congestive splenomegaly and low prothrombin activity. There were also endocrine abnormalities. Finally the findings at operation are noteworthy.

This 24-year-old patient was first seen on November 14, 1956, about eight weeks after giving birth to a normal child. There had been some increased loss of blood with the delivery and she had failed to pick up strength during the puerperium. Her fatigue was very marked: she stated that she slept as much as her baby. She found that climbing stairs made her short of breath. Her eyelids and ankles tended to be puffy and she felt sensitive to cold.

Her past history included measles, mumps and chickenpox during childhood. At the age of 15 she had scarlet fever. Presumably this was not too severe an attack, as she remembers studying during the illness. Three months later she developed a painful

swelling of the joints, which were not inflamed. This illness was diagnosed as rheumatic fever. She spent a week in bed. The aches persisted intermittently over the next year. She began menstruating at 12 years but the periods remained irregular and rather scanty till the present. At the age of 17 she consulted a physician, who found that she had a hyperactive thyroid gland (basal metabolic rate of +25%) and prescribed propylthiouracil. This drug was carried on during eight months until her thyroid function was back to normal. Her liver and spleen were enlarged to about three fingers' breadths below the costal margins. There were no dietary or alcoholic habits to explain this abnormality. The blood study at this time and the radiograph of the skull were reported normal.

At age 21 years she was married. A year later, because of fatigue, she consulted a physician, who found that the level of her protein bound iodine was low. (Apparently she did not receive thyroid extract at that time.)

The significant findings on examination on November 14, 1956, were obesity, rather heavy pallid features, pulse rate 72, blood pressure 130/90 mm. Hg, small breasts, a liver edge three fingers' breadths below the costal margin and a spleen of the same degree of enlargement. The ankles were large and there was faint pitting oedema.

Investigation in hospital at this time included radiographs of the gastro-intestinal tract which appeared normal; a questionable minimal hydronephrosis on the right side; a haemogram suggestive of iron deficiency anaemia (Hb. 11 g. %); total protein of 5.97 g. % (albumen 4.16 g. %); and normal liver function tests (bromsulphalein retention of 2.1% in 45 minutes). Of considerable interest was a glucose tolerance test whose high initial values dropped to 34 mg. % at four hours. At this degree of hypoglycaemia, she showed a shock-like reaction. The B.M.R. was -13%, while the radioactive I^{131} uptake was 22.7% (normal value) and the protein bound iodine was 3 μ g. % (low value). Also of interest were values of 17-ketosteroids of 1.3 mg. per 24 hours (normal: 6 to 17 mg.) and of corticoids, 1.3 mg. per 24 hours (normal: 2 to 5 mg.).

The discharge diagnosis of cirrhosis of the liver with congestive splenomegaly, hypothyroidism, iron deficiency anaemia, obesity and possibly inadequate adrenal function led to treatment with a 1500-calorie high-protein low-fat diet, L-triiodothyronine for thyroid replacement, iron and B_{12} in combination with injections of crude liver extract. This therapy brought considerable subjective improvement, loss of weight, and correction of the anaemia but no real change in the size of liver and spleen.

She continued well until August 1957 when she became tired again but felt that this was attributable to nervous strain. On September 19, she was seen again after six months' absence from Montreal. She was tired and stated that she had noticed her "stomach swelling".

Four days later, consequent on vomiting darkish bloody material and passing tarry stools, she was admitted in semi-shock to the Royal Victoria Hospital. Her haematocrit on admission was 16%. Although she responded to blood transfusions, it was found that her prothrombin activity was 57% of normal and that there was a platelet deficiency. The prothrombin de-

ficiency was corrected by administration of vitamin K_1 , but the platelets remained low. Barium examination of the oesophagus showed no abnormality. No evident source of bleeding was found in the stomach or duodenum. On oesophagoscopy, small but definite varices (4 to 5 mm.) were found.

In the presence of cirrhosis of the liver and congestive splenomegaly with associated reduction of blood platelets, a real danger of recurrent haemorrhages from varices existed. Accordingly, the decision was made to remove the spleen and perform a shunt of the splenic vein into the left renal vein. Transfusions with blood rich in platelets were arranged. Deficient adrenal function was considered as a possible source of complication during the operative period. The 17-ketosteroids were 1.8 mg. per 24 hours and the corticoids 0.6 mg. per 24 hours on October 10. Chlorides were 95 mEq./l. and sodium 132 mEq./l. It was decided to give steroids only if actual indication occurred and not as a prophylactic measure. The B.S.P. test at this time showed 2.3% retention, while the total protein and electrophoretic pattern were within normal limits. Immediately before operation a splenoportogram was done with 70% sodium acetrizoate (Urokon). The resulting image suggested portal hypertension with large oesophageal varices and retrograde filling of numerous veins. The venous pattern of the liver suggested cirrhosis (Fig. 1).



Fig. 1.

Epidural block and general anaesthesia were used at operation on October 9. A large spleen, showing leakage from the needling for the splenoportogram, was seen. The portal system veins were dilated. The liver was enlarged, pebbly in appearance and hard. Pressures were taken in the splenic vein and found in the 250 to 260 mm. of water range. (Pressures over 100 mm. of saline are considered abnormal; haemorrhages are thought to occur at about 300 mm. although many factors may account for variations.) The spleen was removed and the splenic vein joined to the side of the renal vein. On account of the patient's condition, it was not felt wise to take a biopsy of the liver. On pathological examination the spleen was reported to show fibrosis, splenomegaly and haemangioma.

The patient made an adequate recovery from this procedure despite some setbacks and was discharged on October 27. It is of interest to note that the level of blood corticoids on October 17 was within normal limits and that the platelets had become abundant by October 22.

When seen on November 4, 1957, she was feeling reasonably well, though still tiring easily. It was the impression of one of us (C.S.B.) that the liver may have been somewhat less enlarged. The patient's continued improvement was confirmed at a further visit on December 5.

DISCUSSION

The etiology of the cirrhosis in this case must probably remain obscure. That it may have been related to scarlet fever is a possibility. References to cirrhosis of the liver in early life, and to the relation of scarlet fever to cirrhosis, are contained in the first edition of Osler's "Practice of Medicine" (1892): "It has been regarded as rare in children, except in the syphilitic form but Palmer Howard collected 63 cases . . ."; and again, "the fact noted by Klein that in scarlet fever there was an infiltration with small cells. . . ."

The relative ease with which the patient came through her pregnancy is of interest, as is also her possible deficiency in adrenal function. The response to the stress of operation, however, would seem to be good, as shown by the corticoid value a week after operation.

The precarious balance of blood coagulation factors in the presence of liver disease and hypersplenism is well illustrated. The value of fresh blood rich in platelets and the importance of continued observation of prothrombin activity in the postoperative period must be stressed. The good platelet response postoperatively was gratifying.

Oesophageal varices were not shown in the barium examination but oesophagoscopy and splenoportography gave conclusive evidence that these were present. A negative report on a barium swallow is well known to be untrustworthy.

Finally, the technical problems raised in the shunt procedure may be emphasized. The size and quality of the veins involved are important in making the anastomosis and in making one which, it is hoped, will stay patent.

SUMMARY

This case of cirrhosis of the liver was complicated by endocrine and haematological considerations and by haemorrhage. The management of the case required thought in these various fields, particularly in the preoperative, operative and postoperative phases, the details of which have been outlined. The ultimate value of the splenorenal shunt in this case can only be truly evaluated after a longer period of observation.

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MULTIPLE MYELOMA SIMULATING RHEUMATOID ARTHRITIS

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DAVIS, WEBER AND BARTFELD¹ recently published a paper in which they drew attention to the association of multiple myeloma and joint symptoms. The following report may be added to the eight cases published so far and mentioned by them in their paper.

Mrs. A.M. was seen first on May 4, 1949; she was then 70 years of age. She reported that she had noticed pain and stiffness in several joints, namely the left shoulder, the knees, and the interphalangeal joints of the fingers, since March of the same year. She also complained of poor appetite. Any previous diseases were denied.

Physical examination revealed a tender left shoulder joint somewhat impaired in range of motion, fusiform swelling of several interphalangeal joints of both hands and Heberden's nodes, and tenderness and slight swelling in both knee joints. Blood pressure was 170/100 mm. Hg. Otherwise her physical examination was negative. At that time her urine contained a trace of albumin; microscopic examination showed occasional hyaline, coarsely and finely granular casts. Haemoglobin level was 52%, red cell count 3,500,000 per c.mm., white cell count 6500 per c.mm. with a normal distribution of the differential count; sedimentation rate 115 mm. in one hour.

She was admitted to hospital on May 7, and further studies were performed. These included several urinalyses which proved to be negative throughout for albumin and sugar; repeated microscopic examination of the sediment showed only a small amount of white cells. The non-protein nitrogen (N.P.N.) was 20 mg. %. Radiological examination of the gastro-intestinal tract was negative. No occult blood was found in the stools. Radiographs of the lumbar spine showed a considerable amount of osteo-arthritis changes with scoliosis. A diagnosis of rheumatoid arthritis was made and the patient was started on chrysotherapy on May 11. Because of the persistent anaemia, however, this was discontinued after June 23. The patient also received several blood transfusions, and her haemoglobin level was finally stabilized between 70% and 80%.

By January 26, 1950, the patient had gained 12 lb. and was feeling well. Joint symptoms had largely subsided. On a return visit on August 1, she felt well and had maintained her haemoglobin at a level of 76%.

She was not seen again until February 12, 1953, when she complained of weight loss (some 14 lb. since the last visit), dizziness, poor appetite, and backache. Her haemoglobin was 60% and her red cell count 2,890,000. There was some question about a mass in the left lower abdominal quadrant and the patient was hospitalized again for further investigation. A sigmoidoscopic examination and a barium enema gave results within normal limits; as an incidental finding the radiologist also reported marked calcium deposit in the abdominal aorta, and marked osteo-arthritis changes in the lumbar spine. It was thought advisable to study the lumbar spine further.

Views of the lumbar spine revealed destruction of the second lumbar body with a pathological fracture. The pedicles and articular processes were involved in the destructive process. These changes were interpreted by the radiologist as most consistent with a primary malignancy such as multiple myeloma. In view of these findings, stereoscopic projections of the pelvis were taken, which showed multiple rather clear-cut areas of decreased density not only in the pelvis but also in the upper end of the femur and considered typical of multiple myeloma. Similar projections of the skull presented the same type of defects in the cranial vault, mandible and upper cervical spine.

Significant laboratory findings were N.P.N. 33 mg. % on March 2, and 51 mg. % on April 20; a slight trace of albumin in the urine on only a few occasions; several negative results in testing for the presence of Bence-Jones protein in the urine, total plasma proteins 8.4 g. % (albumin 3.9, globulin 4.5), giving an A.G. ratio of 0.87:1.

A diagnosis of multiple myeloma was made, and the patient was treated with urethane, cortisone, and multiple transfusions. However, she failed to improve and died on November 6, 1953. Permission for post-mortem examination was not obtained.

DISCUSSION

Although autopsy could not be obtained, and confirmation by marrow aspiration is lacking, there is very little reason to doubt the diagnosis of multiple myeloma, which seems to be amply supported by the characteristic radiological findings, hyperglobulinæmia, and secondary anaemia. This patient had symptoms which were misinterpreted as those of rheumatoid arthritis on the strength of the presenting signs and symptoms—fusiform swelling of the joints, high sedimentation rate, and anaemia. The correct diagnosis was not arrived at for a period of nearly three years and nine months. In their above-quoted paper, Davis, Weber and Bartfeld report two cases of their own and review six further cases from the literature in which the initial diagnosis of rheumatoid arthritis had been made. The time during which these patient were treated for arthritis varies from eight months to four years and two months, an average of about 23 months.

Multiple myeloma is by no means as rare a disease as it was considered to be and has been diagnosed with increasing frequency during the last decade. Consideration should therefore be given to this condition in the differential diagnosis of joint diseases.

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SHORT COMMUNICATION

DL-METHIONINE IN URINARY INCONTINENCE*

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URINARY INCONTINENCE, causing skin infections, irritations and unpleasant odours, is common in an institution such as ours, which cares for the aged. It has recently been reported¹ that DL-methionine is effective for the prevention of these complications, as well as for the treatment of the incontinence itself. We have carried out a small clinical study of this material, the results of which are herewith reported.

Ten elderly mentally deteriorated and incontinent subjects were selected, ranging from 74 to 88 years of age. The clinical diagnosis in each case was either cerebral arteriosclerosis or senile dementia. Seven were men and three were women.

Gelatin capsules containing 0.2 gram DL-methionine were prepared which were identical in appearance with others containing an inert ingredient (lactose). The double blind technique was used, neither the patients nor the staff knowing the contents of either capsule. It had been the practice in the Home, when caring for incontinent patients, to change the linen (or clothes) and cleanse the patient whenever he or she was found to be wet. A record was kept of the number of times this occurred daily for each subject for the five-week period comprising this study, together with observations on urine odours about the patient and the condition of the skin in the genital and perineal areas.

After a seven-day period of such observation, one type of capsule was given three times daily with meals to the ten subjects for one week, followed by an interval without medication. The other capsule was then given in an identical manner for one week, again followed by a medication-free week.

RESULTS AND DISCUSSION

No untoward effects were observed with either capsule. There was a marked decrease of uriferous odour, which in most cases disappeared entirely after three to four days of administration of the capsules which were subsequently identified as those containing DL-methionine. In addition, it was noted that any skin irritation in the genital and perineal areas markedly improved. Three of the men suffering from cerebral arteriosclerosis showed a 50% reduction in frequency of wetting, while the others showed no appreciable change in this respect. Relapse to the initial state began, in all cases, two to three days after discontinuation of the medication. No appreciable effects were observed when the inert capsule was given.

*From the Montreal Hebrew Old People's and Sheltering Home, Montreal, Quebec.

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(Information regarding contributions and advertising will be found on the second page following the reading material.)

HALIFAX, 1958

The weather was ideal for the Association's 91st Annual Meeting in Halifax. It struck the keynote for the meeting, for it was both tranquil and welcoming, avoiding unnecessary heat and the chill of indifference alike. Like the weather, the meeting itself was calm. Council transacted its business without undue storm and with dispatch. There were no clarion calls to action (or at least only muted ones) and no major crises. The scientific sessions were also mainly devoid of emotional storms, though our forceful and distinguished guests from the U.S.A., Drs. Dubos and Rutstein, ruffled a few feathers with their provocative though highly logical remarks. The politicians who addressed us at lunch did not abuse or threaten us; indeed, they were most amiable and conciliatory.

Apart from its tranquillity, acquired no doubt from contact with the well-matured environment of Halifax, the meeting was noteworthy for the amount and variety of its hospitality. The Lucullan banquet of lobster and a host of other things provided by New Brunswick after the President's installation, the huge square dance in the gymnasium of H.M.C.S. *Stadacona* with its attendant air of naval jollity—these and a host of other social occasions filled every moment not devoted to business or science.

For all this we owe thanks to all the Atlantic Provinces that made this delightful week such a success.

Perhaps this is a suitable time to make a small comment on one of the purposes of such a general meeting—to bring together persons from all the varied fields in medicine. There have just been three consecutive major meetings in Canada. At the first, the meeting of the Canadian Federation of Biological Societies, it was good to see the clinical investigators invading the ivory towers of our preclinical allies; at the third, the International Congress of Obstetrics and Gynaecology, it was equally good to see the embryologists, histologists

and physiologists storming the busy world of the obstetrician, questioning some of his activities and clarifying others. In each case the result of the invasion was stimulating and valuable to both parties. Should we perhaps in planning Annual Meeting programs always try to keep a place at the table for our colleagues of the preclinical disciplines—or is this just a sentimental and impractical thought?

PSYCHOPROPHYLAXIS OF LABOUR

Psychoprophylaxis is not an elegant or particularly commendable word, and the obstetricians from the four corners of the earth who discussed it at great length in the recent International Congress of Obstetrics and Gynaecology in Montreal seemed to have some difficulty in defining it. Vellay of Paris, who had had six years of experience of this method of preparing women for labour, pointed out that three factors determine the course of childbirth: (1) physical; (2) mental; (3) anatomical and obstetrical. It is clear therefore that psychoprophylaxis should refer to any method in which the woman is so prepared as to render her mental outlook most favourable to a safe delivery. Indeed, Vellay emphasized that although physical training for labour is a logical thing to do, the crux of psychoprophylaxis did not lie in gymnastics.

Moggian of Bologna briefly reviewed the world situation as regards psychoprophylaxis, stating that the continent of Europe (particularly France and the U.S.S.R.) followed a system based on Pavlovian theory, while the U.S.A. knew nothing of this but practised a method which he attributed to Dick-Read—"natural childbirth". This type of psychoprophylaxis has of course been admirably described by H. B. Atlee of Halifax in his book "Natural Childbirth". A very similar description was given to the Congress by Buxton of Yale, who in the most informative presentation of the day said that the Yale technique was simply a refinement of techniques which had been practised by good midwives and physicians since time immemorial. At a later period in the discussion, Bell of London, England, said much the same thing in vigorously denying the claims of novelty for the Dick-Read technique.

Buxton, like other speakers, stressed the need for re-education as well as education. The woman had to unlearn superstitions and folk lore, and acquire a correct knowledge of pregnancy and labour.

There is no doubt an element of suggestion in all this; it must be suggested to the woman that her labour is important, not only to her but to the community, and that she will approach her labour without anxiety, and in consequence avoid the tension due to fear. Since continuous moral sup-

port throughout labour was acknowledged to be the culminating point of preparation, one obstetrician raised the question of hypnosis as a factor. In a later paper, Baer of St. Paul stated emphatically that women who had had "natural childbirth" and later hypnosis in preparation for labour infinitely preferred the latter, but he also admitted that hypnosis is a very time-consuming technique and not applicable to all women.

The main Russian contribution to the discussion by Petrov-Maslakov of Moscow contained references to Pavlovian philosophy and made psychoprophylaxis in Russia seem a somewhat esoteric and difficult technique. One suspects, however, that in spite of all the talk of conditioned reflexes and association situations, our Russian confreres are doing basically the same thing as the North Americans, namely dispelling fear through education and support.

Many speakers reiterated that psychoprophylaxis does not mean a promise of childbirth without pain. It was essential for the woman to understand that she could have assistance from sedatives and analgesics at any time in labour, and that this would not be interpreted as a failure on her part. Moreover, Buxton was very emphatic that operative intervention by Cæsarean section or forceps delivery must be used just as readily in prepared as in unprepared patients. Good basic obstetrics must not be compromised just to prove the superiority of mind over matter.

This leads to another question. Granted the great psychological value to the patient of psychoprophylaxis, what does it do to labour in terms of what Buxton called measurable obstetric units? Petrov-Maslakov spoke of its regulating effect on labour, but Bell quoted two series in which "natural childbirth" education had had no measurable effect on such physical factors as length of stages of labour, and Buxton mentioned the futility of comparing statistics from groups of prepared and unprepared women, since the former were a selected population. This would of course apply to such matters as the amount of drugs required. There is yet much to learn about objective effects of psychoprophylaxis.

Perhaps we should leave the last word to a physician's wife who at the end of the round table conference was heard to remark, "I've just been listening to a lot of men talking about something they know nothing about."

Editorial Comments

HOSPITAL ACCREDITATION IN CANADA

Although governments are moving quickly in the direction of organizing methods for the payment of the expenses of hospitalization, it remains a professional responsibility to determine the quality of medical care rendered to patients in our hospitals.

This is an old story, beginning with the hospital standardization program of the American College of Surgeons in 1918, brought to wider application by the organization of the Joint Commission on Accreditation of Hospitals in 1951, and now developing as a national movement in this country with the institution of the all-Canadian program of hospital accreditation next year.

As of January 1, 1959, the agency which will inspect and rate Canadian hospitals will be The Canadian Council on Hospital Accreditation. This organization, which has been functioning for several years as part of an international effort, is made up of representatives of the Canadian Hospital Association, The Canadian Medical Association, The Royal College of Physicians and Surgeons of Canada, and l'Association des Médecins de Langue Française du Canada. The reasons why these Canadian agencies have decided that we can do it better ourselves are ably set out by Dr. E. K. Lyon in his contribution to the Symposium on Hospital Insurance¹ and in his report to the General Council.²

Initially the Canadian Council will adopt the standards and the methods of the Joint Commission, but it is possible that the needs of mental hospitals, convalescent and other special hospitals will require some modification of the basic standards. The Canadian Council is determined to permit no changes that might impair the high quality of patient care which is the pride of the hospitals wearing the badge of accreditation, a badge which it should be the aim of every Canadian hospital to acquire.

If your hospital has a capacity of 25 beds or over, it is eligible for accreditation. Facilities and services which are demanded in larger institutions are not a requirement, but the basic principles essential to good patient care must be present. The professional satisfactions of working in a hospital which has been assessed and found adequate are worth striving for, and the interests of our patients demand that we should not settle for anything less.

After January 1, 1959, all enquiries and applications relative to the accreditation of Canadian hospitals should be addressed to The Canadian Council on Hospital Accreditation, 150 St. George Street, Toronto.

REFERENCES

1. LYON, E. K.: *Canad. M. A. J.*, 78: 761, 1958.
2. *Idem*: *Ibid.*, 77: 405, 1957.

MANIPULATION IN BACK PAIN

Colchicine has been used in the treatment of gout for over one thousand years, and although its mode of action is still unknown no one would dismiss the use of the drug as an empirical, irrational procedure. Manipulations have been used effectively in the treatment of backache for a similar length of time—and yet there are many physicians today who scornfully disparage this form of therapy as "empirical and irrational". On

the North American continent manipulation of the spine has gathered the aura of unethical practice and the art has passed into the hands of unlicensed practitioners. The article by Parsons and Cumming in this issue (p. 103) is therefore timely. They present evidence acceptable to the medical profession that in a large series of cases manipulation of the back shortens the period of disability considerably.

After reading this article, many physicians, emboldened by the reported lack of complications, and guided by the excellent description of the procedures employed, may be encouraged to practise this lost art once again. But lest manipulations again fall into disrepute, it must be remembered that backache is a symptom and not a disease; because of this, the probable pathological basis of the patient's complaints must be determined before employing any form of therapy—empirical or otherwise.

It is probable that manipulations afford relief only to the group of back pains due to "internal derangements of the spine", that is to say, to mechanical disorders of the vertebral articulations. The exact nature of these lesions is obscure. There are many who will find cause for disagreement with the theories postulated by Parsons and Cumming. The appearance of a prolapsed disc at operation makes it difficult to believe that mechanical reposition of the extruded fragment is any more feasible than manipulative repair of a blister on a motorcar tire; though it is certainly possible that manipulation of the spine might free the root from the apex of the protrusion and thereby relieve the root tension.

Although Parsons and Cumming in their vast experience have had the good fortune to avoid the disaster of consequences of complete nuclear extrusion following manipulation, such complications (though rare) are only too well known in all senses of the phrase. The tyro in the manipulative art would be well advised to avoid manipulation of the spine in cases presenting evidence of root tension or root compression.

Although the authors pay little regard to subluxation of the posterior joint (secondary to disc instability), these lesions have been frequently described. It would seem that it is in this group that manipulation is most likely to succeed. However, whether the lesion lies in the disc or in the joint will only be determined by an extended clinical trial of the method they propose.

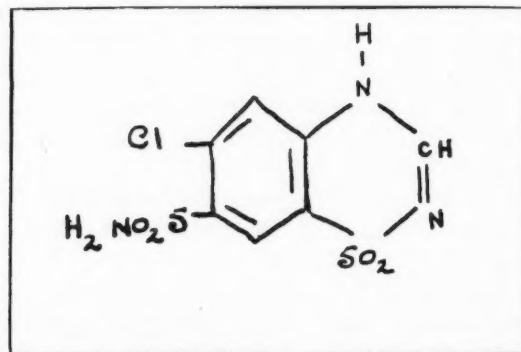
A final point made by the authors must be emphasized. Even in the ideally suited case, manipulation of the back is not treatment. It is the *beginning* of treatment. These patients still require the routine of spinal hygiene—weight control, postural re-education, exercises, instruction in protection of the back—and in some instances braces and a change in occupation. Unless all these other aspects are looked into, it is almost certain that the patient will have a recurrence because, at best, the manipulation does nothing to cure the underlying cause of the mechanical derangements of the spine.

IAN MACNAB

CHLOROTHIAZIDE

For several years, an intensive search has gone on for what may be termed the ideal oral diuretic agent. Such a preparation has been considered to have certain prerequisites, including ease of administration, high potency, and absence of undesirable side-effects, either from its basic mechanism of action or as the result of its toxic or "allergic" propensities. It should induce a diuresis of water, sodium, and chloride in such proportions that their relationship in the extracellular fluid remains unaltered, and should therefore not result in electrolyte imbalance. It should act rapidly, enabling patients to respond early, without becoming refractory later. Continuous administration should allow the seriously incapacitated patient to exist on a diet containing a palatable amount of sodium chloride.

During the past year, a large number of papers have appeared in the medical literature, concerning a preparation which appears to meet most, if not all, of these prerequisites. Chlorothiazide is an organic sulphur compound of high biological activity, which produces its effects by blocking the reabsorption of sodium and chloride in the renal tubule. The following structure has been assigned to it:



Chlorothiazide *in vitro* is an effective inhibitor of carbonic anhydrase, but in man this does not appear to be the primary mechanism for the diuresis it produces. The primary pharmacodynamic effect already referred to, of increasing sodium, chloride and, secondarily, water excretion, resembles that of a potent organic mercurial diuretic.

Certainly chlorothiazide, also as indicated above, fulfils most of the prerequisites of the ideal diuretic. It is effective by mouth. After an oral dose of 1 g. the excretion of sodium and water increases during the second hour after administration, and usually reaches a maximum between six and eight hours. The total duration of the diuresis usually is 10 to 14 hours.

As to potency, in many studies chlorothiazide has been found the most potent oral diuretic agent available to date. In doses of 1.0 to 2.0 g. daily, it appears to be equivalent in action to 1 to 2 c.c. of a potent organomercurial diuretic intramuscularly.

Repeated investigation has revealed that repeated 1-g. doses of chlorothiazide, administered twice daily to patients on a fixed sodium intake, result in an almost equimolar loss of sodium and chloride. Thus, one does not expect to find

hypochloræmia after prolonged dosage, nor is there any evidence of significant change in the serum bicarbonate level, as is occasionally seen after diuretic therapy with primary carbonic anhydrase inhibitors.

In one respect, chlorothiazide falls short of the ideal; it increases potassium excretion, resulting in a fall in the serum potassium level with or without symptoms of potassium depletion. It would appear, therefore, that in most cases potassium supplements should be given. A convenient method of attaining this end, particularly in patients on low sodium diets, is to prescribe one or other of the salt substitutes, most of which contain significant quantities of potassium. So long as this disadvantage of chlorothiazide is appreciated, it is not likely to result in any serious problems.

Another respect in which chlorothiazide does not attain complete perfection as an oral diuretic is in the occasional development of refractoriness. Failure to respond clinically to this diuretic may occur rarely in severely ill patients, particularly those with low glomerular filtration rates, and in some patients with hepatic cirrhosis. Such refractoriness also occurs in severe hypoproteinæmia.

Surprisingly enough, chlorothiazide has to date proved outstandingly free of toxic effects. This is not to say, however, that the further extensive use of this preparation, which will undoubtedly occur, will not uncover instances of toxicity. This is the usual situation, but experience to date has been most encouraging.

In addition to the merits of this rather unusual diuretic agent already described, there is also on record a small body of evidence indicating that this drug has antiarrhythmic properties. In the laboratory, at least, it appears to have the ability to eliminate ventricular premature beats and bigeminy, as well as other forms of extrasystoles, resulting from the use of digitalis preparations and other myocardial stimulants.

It is also of some interest to note that chlorothiazide and organomercurial diuretics potentiate one another. This, again, is in contradistinction to the situation with pure carbonic anhydrase inhibitors. A further advantage of chlorothiazide lies in the fact that it is effective in a variety of renal diseases and in mild-to-moderate renal insufficiency; many diuretics are contraindicated in such circumstances. In patients with renal disease, chlorothiazide seems to produce the best result in those who have salt retention without gross impairment of the glomerular filtration rate. Thus, it is found to be particularly valuable in the management of patients with the nephrotic syndrome.

It is not often in the process of evaluation of a drug that one may expect a "bonus". However, in the case of chlorothiazide, this unusual situation exists, for besides being a potent diuretic in the treatment of congestive cardiac failure and renal disease, chlorothiazide is a valuable adjunct in treatment of the œdema and ascites of chronic liver disease. Furthermore, there is now no doubt that chlorothiazide is in many cases an effective antihypertensive agent, especially when combined with other such agents, in particular, the hydralazine preparations and the ganglionic blockers. Its antihypertensive effect is probably, in the first

instance, based on its effect on electrolyte excretion or redistribution, which may play an important initiating, sensitizing or potentiating role in its antihypertensive action. It is possible that a decrease in pressor substances such as renin by chlorothiazide may be an integral part of its antihypertensive action, especially during its continued use, when the primary diuretic effect may become either compensated for or dissipated. Finally, recent studies have suggested that chlorothiazide may be a valuable drug for the prevention and treatment of the toxæmias of pregnancy.

It would seem therefore that with certain exceptions, which should be carefully kept in mind, chlorothiazide approaches the concept of the ideal diuretic agent. Only the passage of time and further widespread use of this preparation will uncover other aspects of its therapeutic and toxic range.

BRONCHIECTASIS AND NEUROPATHY

The noteworthy association of carcinoma of lung with neuropathy has been the subject of comment in these pages (*Canad. M. A. J.*, 78: 533, 1958). We now have a report from New Zealand of two patients with bronchiectasis who developed peripheral neuropathy with predominantly sensory changes. Caughey, Wilson and Borrie¹ describe the course of the lung infection and the striking parallelism between it and the progression and remission of the neuropathy. In both cases, satisfactory treatment of the bronchiectasis was followed by gradual improvement in the neurological disorder, resulting eventually in almost complete recovery. The authors suggest that the same etiological factors may be operative in these cases as in those associated with carcinoma of the lung. It is indeed remarkable that all the cases thus far reported involve the lungs, except for one case of œsophageal disease.

On the other hand, there is no conclusive evidence that the present two cases are comparable to those described in association with carcinoma of the lung. In the latter cases pathologic changes were found in the spinal cord, the dorsal and ventral nerve roots, peripheral nerves and muscle. In the present two patients there was no atrophy of muscles, and the presence of clubbing of the fingers indicates that the lung infection preceded the neuropathy by some considerable time.

W. GROBIN

REFERENCE

1. CAUGHEY, J. E., WILSON, R. F. AND BORRIE, J.: *Thorax*, 13: 59, 1958.

Medical News in brief**HOW MANY INJECTIONS OF
POLIOMYELITIS VACCINE FOR
EFFECTIVE AND DURABLE IMMUNITY?**

Dr. Jonas Salk (J. A. M. A., 167: 1, 1958) has extended observations of antibody response and persistence following varying doses of poliomyelitis vaccine on the initial 3-dose vaccination schedule, and the degree of response to a booster dose. It appears from this latest study that antibody might be expected to be demonstrable for a number of years after an effective course of immunization. An effective level of immunity initially can be achieved by the administration of a sufficient quantity of antigen. Although at present this has not been uniformly achieved, present trends suggest that it is possible to produce a vaccine of sufficiently high and constant potency to provide uniform and durable immunity to paralytic poliomyelitis. In public health practice emphasis will therefore be on a campaign for three injections. A fourth injection may be made optional, as there is no evidence of harm from it. The private physician, on the other hand, has to consider the individual case, and when asked by the parents whether a fourth injection should be given he will find it difficult to advise them that it is unnecessary. One has to remember that any particular child might be one of the 10 or less of a group of 100 triple vaccinated children who might benefit from a fourth dose.

NACTON IN DUODENAL ULCER

Douthwaite and Hunt of Guy's Hospital, London (*Brit. M. J.*, 1: 1030, 1958) report a trial in duodenal ulcer of a new French drug, Nacton or (1-methyl-2-pyrrolidyl) methyl benzilate methyl methosulphate, a compound with an atropine-like action of long duration. They performed many test-meal studies on 25 in-patients, the average period of observation being 30 days. In some patients, gastric function was further studied after their discharge from hospital. By giving doses of Nacton carefully adjusted not to produce side-effects it was possible in 23 cases to reduce gastric secretion of acid in response to test meals for two to eight hours after a dose of the drug. The results are thought to be relevant to the response to ordinary food. As compared with atropine, the degree of specificity and duration of action of Nacton were interesting. Moreover, a fall in gastric secretory response to test meals persisted for up to three days after the drug had been discontinued.

FUNNEL CHEST

A series of 20 cases of funnel chest, in which the condition was corrected at operation, are described by Hegemann and Schoberth¹ of Erlangen, Germany, who recommend operation between the ages of 5 and 25 years in every case of severe funnel chest, even without subjective or objective findings of cardio-respiratory involvement. In older patients, operation should be performed only when there are definite cardiac signs due to the deformity. Cosmetic results

were good in 18 of the authors' cases. Young patients were treated by sternal elevation after resection of the involved costal cartilages and a transverse wedge sternotomy at the level of the second intercostal space. In older patients a more extensive mobilization and reconstruction of the chest wall was needed. In an accompanying article Baer and his colleagues² describe lung function studies in 16 of these cases. Cardiac catheterization in 6 cases showed haemodynamic changes similar to those in constrictive pericarditis. Pulmonary function was within normal limits.

1. HEGEMANN, G. AND SCHOBERTH, H.: *German M. Monthly*, 3: 109, 1958.
2. BAER, C. G., ZEILHOFER, R. AND HECKEL, K.: 3: 113, 1958.

**PHENYLBUTAZONE IN
DYSMENORRHOEA**

At the Second World Congress of Obstetrics and Gynaecology last month, Dr. Elinor Black of Manitoba advocated the use of phenylbutazone in dysmenorrhoea occurring in women with no obvious cause. She had given this in intractable cases in women aged 16 to 41. Of the series, 21 had a normal pelvis, and 4 endometriosis for which they had refused surgery. She gave 100 mg. t.i.d. from the day before the expected period. There was little danger of side effects if the prescription was controlled. Out of 22 patients followed up 6 were free of symptoms and had diminished the dose or stopped the drug, 13 had marked improvement and could carry on, while two needed a little extra analgesia and one had no improvement. Apart from the one failure, all the women had been freed from nausea and vomiting immediately. Out of the four patients with endometriosis, three were free from pain and one needed some extra analgesia.

SERUM LIPOPROTEINS IN PREGNANCY

At the Second World Congress of Obstetrics and Gynaecology, one of the scientific exhibits was concerned with serum lipoproteins. This exhibit by Drs. Strean, Gelfand, Sternberg and Dawson of Montreal gave a simple account of lipoproteins, defining them as substances of large molecule containing proteins, lipids and water. The lipid fraction consisted of phospholipids and cholesterol. Electrophoresis divided the lipoproteins into alpha and beta ones. In normal non-pregnant women the ratio beta/alpha was 3:7. This index was up in hypercholesterolaemia and down in hypocoestrinism. In pregnancy the ratio also fell to 2:2. It was raised in obstructive jaundice, early acute hepatitis, biliary cirrhosis, hypothyroidism and nephrosis, and particularly in atherosclerosis (range 9 to 32), also in pregnancy toxæmia. It could be low (under 1) in threatened abortion. The ratio was low in hyperthyroidism and hyperoestrinaemia. This is the reason for oestrogen treatment in atherosclerosis. Oestrogens exercise what the authors call a lipodiatic action. It is suggested that routine determinations of alpha and beta lipoproteins in pregnancy might help to detect pathological pregnancies.

(Continued on advertising page 36)

MEDICAL FILMS

CONTINUING the listing of available films on medical and related subjects, we list below additional films. The films are held in the National Medical and Biological Film Library and are distributed by the Canadian Film Institute, 142 Sparks Street, Ottawa, Ontario. The evaluations have been prepared by Canadian specialists in the subjects of the films, under the Medical Committee of the Scientific Division of the Canadian Film Institute, which is headed by Dr. G. H. Ettinger.

DISEASE (Pathology, Diagnosis, Treatment)

Cardiac Irregularities—1939; Silent; B & W; 33 minutes.

Produced by Eastman Medical Films (now Encyclopædia Britannica Films Inc.).

Description.—An instructional film, illustrating the physiological basis and mechanisms of disturbances of the heart beat.

Appraisal (1945).—Recommended for teaching physiology to pre-clinical medical students and for review in the clinical years, but is of practically no value for clinical teaching. Clearly presented, up-to-date and accurate. *Unsuitable for non-medical audiences.*

Availability.—National Medical and Biological Film Library (\$3.00). Purchase (in Canada) from General Films Limited, 1534-13th Avenue, Regina, Sask.

Diagnosis and Treatment of Infections of the Hand—1928; Silent; B & W; 49 minutes.

Produced by Eastman Medical Films (now Encyclopædia Britannica Films Inc.).

Description.—An instructional film, illustrating the diagnosis and treatment of the most important and serious types of infections of the hand.

Appraisal (1945).—An excellent teaching film for medical students, interns and nurses; it is suitable also for general practitioners and surgeons. The animation is excellent, and the basic principles are up-to-date, although treatment with penicillin and the sulfonamides has since been added. Inappropriate for non-medical audiences.

Availability.—National Medical and Biological Film Library (\$4.50). Purchase (in Canada) from General Films Limited, 1534-13th Avenue, Regina, Sask.

Diseases of the Ear, Nose and Throat—1946; Silent; Colour; 33 minutes.

Produced at the Department of Laryngology, University of Illinois College of Medicine, St. Luke's Hospital and Children's Memorial Hospital, Chicago.

Description.—A record-instructional film, demonstrating pathological conditions of the ear, nose and throat, oesophagus and tracheo-bronchial tree, as visualized by endoscopic cinematography.

Appraisal (1948).—An outstanding film, as regards subject matter and technique of presentation. It should prove invaluable for the teaching of medical students and all physicians interested in the examination of these parts of the body. Highly recommended. *Unsuitable for non-medical audiences.*

Availability.—National Medical and Biological Film Library (\$4.00). Purchase from the Jacques Holinger Memorial Fund, 700 North Michigan Avenue, Chicago 11, Illinois.

The Early Diagnosis of Acute Anterior Poliomyelitis—1947; Sound; B & W; 13 minutes.

Produced for the U.K. Central Office of Information and the Ministry of Health.

Description.—An instructional film, illustrating the symptoms and methods of diagnosis of acute anterior poliomyelitis (a "rush" production for the information of general practitioners at the time of the 1947 polio epidemic in the United Kingdom).

Appraisal (1948).—A most valuable film both for the senior medical student and the practitioner. It presents very well indeed the diagnostic techniques and methods. A very useful film and wholly recommended for general practitioners, interns, senior medical students and nurses. *Unsuitable for non-medical audiences.*

Availability.—National Medical and Biological Film Library (\$1.50). For purchase apply to the Canadian Film Institute, 142 Sparks Street, Ottawa 4, Ontario.

Exploring with X-Rays—1941; Sound; B & W; 39 minutes.

Produced for the General Electric X-Ray Corporation.

Description.—Portrays the development and use of x-rays for many purposes, with emphasis on the medical.

Appraisal (1945).—Treatment of the subject matter is very superficial and, to a medical audience, amusing rather than instructive. The presentation is clear as far as it goes, however, and the film is suitable for uninstructed lay audiences. Recommended for high-school students as a vocational guidance film, and suitable for other interested general adult audiences.

Availability.—National Medical and Biological Film Library (\$3.00). For purchase apply to the General Electric X-Ray Corporation, Chicago, Illinois.

Fundamentals of Massage—1945; Sound; B & W; 15 minutes.

Produced for the Division of Visual Aids of the U.S. Office of Education.

Description.—An instructional-training film, demonstrating massage movements and their physiological effects.

Appraisal (1945).—A good film as far as it goes, but for untrained audiences interpretation by a competent instructor is a necessity. Too sketchy; shows only a few massage movements; massage too light considering size and obvious strength of the patient; position of patient when prone is incorrect; little rhythm in massage movements shown. Diagrams are good. Film is suitable for specialists in the subject and for students in nursing and physiotherapy, but is inappropriate for other audiences.

Availability.—National Medical and Biological Film Library (\$2.30). Purchase from United World Films Inc., 1445 Park Avenue, New York 29, N.Y.

Gait—1953; Sound; Colour; 33 minutes.

Produced for Imperial Chemical Industries Limited.

Description.—An instructional film, illustrating and differentiating the effects on gait of various lesions in the neuromuscular mechanism.

Appraisal (1956).—An excellent presentation of the subject, with teaching qualities of the highest order. Photography and sound excellent. Recommended for medical students in the clinical years and for general practitioners and interns. Suitable for other medical audiences and for nurses. *Unsuitable for non-medical audiences.*

Availability.—National Medical and Biological Film Library (\$4.50). For purchase apply to Publicity Department, Imperial Chemical (Pharmaceuticals) Limited, Fulshaw Hall, Wilmslow, Manchester, England.

Gastro-Intestinal Cancer—The Problem of Early Diagnosis—1950; Sound; Colour; 33 minutes.

Produced for the American Cancer Society and the National Cancer Institute of the U.S. Public Health Service.

Description.—Presents the problem and demonstrates methods of early diagnosis of gastro-intestinal cancer (oesophagus, stomach, small intestine, large intestine, rectum).

Appraisal (1951).—Outstanding, both technically and as an example of sound medical teaching. Highly recommended for showing to general medical audiences; especially valuable for medical students in their clinical years. Exceptionally lucid, clear, accurate, up-to-date and well presented. *Unsuitable for non-medical audiences.*

Availability.—National Medical and Biological Film Library (\$6.00). Purchase from the American Cancer Society, Inc., 47 Beaver Street, New York 4, N.Y.

(To be continued)

THE NINETY-FIRST ANNUAL MEETING OF THE C.M.A.

ANNUAL GENERAL MEETING

The Annual General Meeting of the Canadian Medical Association was held in the Nova Scotian Hotel, Halifax, on Wednesday, June 18, at 8.30 p.m. The invocation was given by the Rev. Austin MacPherson of Middleton, Nova Scotia, after which the outgoing President, Dr. Morley Young, gave his valedictory address. Dr. Young said, "I asked myself this question, 'What is a valedictory address?' The origin of a word has a fascination for me and 'valedictory' seemed to be a word with possibilities. *Vale* means 'farewell' and *dicere* means 'to say'. It seemed simple—valedictory meant to say farewell. I then noted that 'fare' comes from an Old Saxon word *farun*, which means to travel and that 'vale' is from the Latin verb *valere*, 'to be strong or well'. Thus it would seem that a valedictory address was one given when someone sets out on a journey, the inference being that they would travel well and strong." The speaker was therefore not sure whether he or Dr. VanWart should be giving the address. After tendering thanks to the many persons who had given help and co-operation to himself and his wife in the past year, and noting some of the unusual events in it, Dr. Young concluded in the following words:

"Now, what of tomorrow? On the C.M.A. trail upon which we travel, our guiding influence will be the desire to give the best of medical care to the people of Canada, and to practise medicine in such a way that others may follow our example with benefit. From these ideals we turn neither to the right nor to the left.

"To meet the challenge of these ideals we need the co-ordinated efforts of all. If in union there is strength, 'twould be folly to divide. In travelling from St. John's to Vancouver one cannot help but feel that we must ever be conscious of the need for co-ordinated effort."

The following fraternal delegates were then introduced: Dr. Edward R. C. Walker of Edinburgh, official delegate from the British Medical Association; Dr. Charlton Yeatman of North Adelaide, Australia, official delegate from the British Medical Association, South Australia Branch; Dr. Malcolm B. Dockerty of Rochester, Minnesota, official delegate from the American Medical Association. Senior Membership was then conferred upon a number of distinguished physicians; the number actually present to receive their honour was almost a record. The list included Dr. Frank M. Bryant of Victoria, B.C.; Dr. Charles R. R. Bunn of Red Deer, Alberta; Dr. J. B. Ritchie of Regina, Saskatchewan; Dr. J. C. Gillie of Fort William, Ontario; Dr. H. J. G. Geggie of Wakefield, Quebec; Dr. H. P. O'Neill of St. Andrews, New Brunswick; Dr. P.-C. Laporte of Edmundston, New Brunswick; Dr. M. G. Tompkins of Dominion, Nova Scotia. The Senior Member for Newfoundland, Dr. J. I. O'Connell, was not present, and a posthumous Senior Membership was conferred on the late Dr. A. F. Menzies.

The business session of the Annual Meeting was brief and consisted in a presentation to the membership of the amendments to the Act of Incorporation and the By-Laws, already approved by the Executive Committee and the General Council. The new President, Dr. Arthur F. VanWart of Fredericton, New

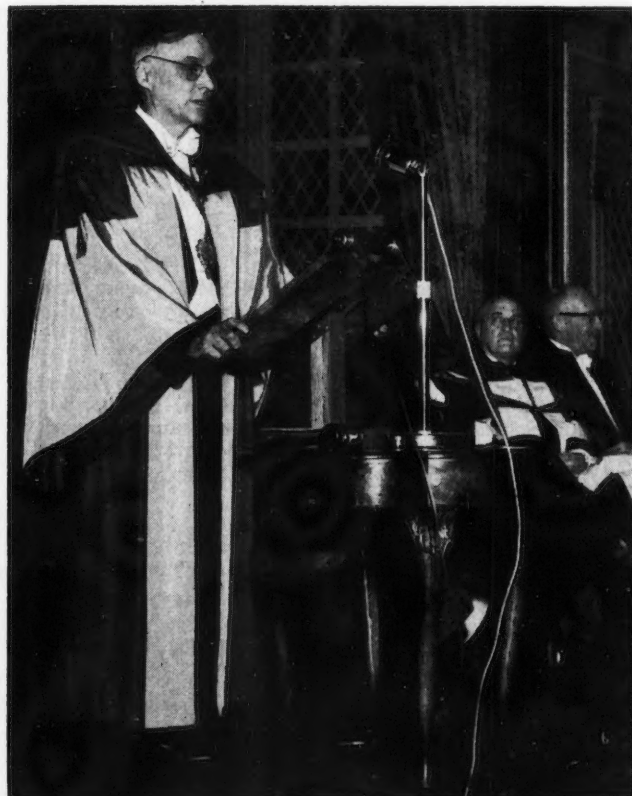


Dave Thomas, Halifax

Dr. A. F. VanWart is installed as President by his predecessor, Dr. M. A. R. Young.

Brunswick, was then installed by his predecessor. Dr. VanWart, in accepting the presidency, said:

"After weeks of preparation for our convention, a feeling of relief and relaxation comes with its opening, but suddenly tonight the feeling of responsibility returns. Consolation is to be found in the fact that 90 others have had this experience, but then there are famous names among this group. I wish to name but



Dave Thomas, Halifax

Dr. VanWart gives his inaugural address.

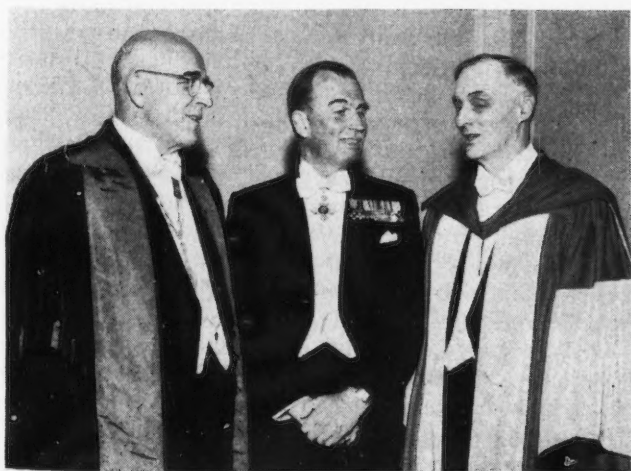


Dave Thomas, Halifax

Dr. M. A. R. Young confers Senior Membership on Dr. H. P. O'Neill of St. Andrews, N.B.

four—the first President, Sir Charles Tupper of Halifax, a father of Confederation and later Prime Minister of Canada; then Sir Wm. Osler, the internationally famous physician; Sir Thomas Roddick, who successfully obtained the consent of all the provinces to a Federal Act creating the Medical Council of Canada, a body responsible for examination of medical candidates for registration to practise in any Canadian province (an outstanding accomplishment when one considers the present status of Federal-Provincial relations in university education); lastly, Dr. T. Clarence Routley, the architect of the present Canadian Medical Association.”

He recalled the 1921 Annual Meeting in Halifax, at which the Canadian Medical Association was re-



Dave Thomas, Halifax

At the President's reception (left to right): Dr. M. A. R. Young; the Hon. Maj.-Gen. E. C. Plow, C.B.E., Lieutenant-Governor of Nova Scotia; and Dr. A. F. VanWart.

activated; this was the first C.M.A. meeting he had attended. The weather was very hot and humid, and after hiring a motor-boat and floating about the North West Arm to get relief from the heat, the speaker returned to his sticky room in the old Halifax Hotel on Hollis Street, little dreaming that he would one day be President. He thanked his confreres in New Brunswick for nominating him to this position, and his many friends in the rest of Canada for their kind expressions of goodwill. He said, “As I have stated to my own division, I will continue to be guided by the same principles that have always guided me: that no person shall be denied full medical care for financial reasons; that the present doctor-patient relationship shall be maintained; that those giving the medical services shall be rewarded in a manner that becomes their professional status; that clinical and preventive medicine, medical research and medical education shall be maintained at the highest possible level; that the medical profession shall be conscious to the fullest extent of its moral responsibilities.”

In conclusion he hoped that his year would be as successful as that of his predecessor, Dr. Morley Young.

Dr. VanWart then presented the Past President's Badge to Dr. Young and the meeting adjourned.

Dr. and Mrs. VanWart held a reception after the meeting, and dancing followed in the ballroom of the hotel. Shortly after 11 o'clock a buffet supper of magnificent proportions, given by the courtesy of the Province of New Brunswick, was served in the main dining room of the hotel.

GENERAL COUNCIL

The General Council of the Canadian Medical Association met in the ballroom of the Lord Nelson Hotel, Halifax, N.S., on Monday and Tuesday, June 16 and 17, with Dr. Norman Gosse in the chair. Members were welcomed by the President-Elect, Dr. A. F. VanWart of Fredericton, N.B. The chairman then gave a general account of the functions of Council for the benefit of new members, emphasizing that its proceedings transcended provincial limits and specialized interests, and that there was no hierarchy in this democratic body.

A steering committee or committee on resolutions was then set up, consisting of Dr. F. Turnbull, B.C., Dr. R. Tisdale of Saskatchewan, and Dr. Vance Ward, Quebec.

The report of the Committee on Archives was presented by Dr. A. D. Kelly, in the absence of the committee chairman, Dr. H. E. MacDermot. One hundred and four members had died during the past year, and the usual minute of silence was observed in their memory. The report also referred to the Association archives, giving the opinion that it was best for each Division to maintain its own historical records, though material not directly related to a Division might well be kept at C.M.A. House. The report also referred to the second volume of the history of the Canadian Medical Association, which Dr. MacDermot has been preparing and which on publication will contain a printed record of the affairs of the Association in its recent years.

The report of the Executive Committee followed, Dr. M. Klotz taking the chair during its consideration. Thanks were expressed to the Alberta Division for its hospitality in 1957, and some mention was made of the unique nature of the 1958 meeting, in which all four Divisions of the Atlantic provinces shared responsibility. Preparations for the 1959 meeting in Edinburgh on July 18-24 were briefly described. It was agreed that the General Council of the C.M.A. should meet next year in Toronto on May 29 and 30, or at such other dates as the Executive Committee should determine, in conjunction with the 1959 meeting of the Ontario Medical Association (May 25-29).

Council expressed its gratification at the acceptance by H.R.H. The Duke of Edinburgh of the office of President of the C.M.A. in 1959-60. It instructed the Nominating Committee to consider the selection of a Canadian deputy to carry out the President's duties during his absence from Canada during 1959-60, subject to the concurrence of the President.

Thanks were expressed to Dr. and Mrs. M. A. R. Young for the way in which they had carried out their duties in the past year.

The election of the following Senior Members was announced:

British Columbia—Dr. F. M. Bryant, Victoria
 Alberta—Dr. C. R. R. Bunn, Red Deer
 Saskatchewan—Dr. J. B. Ritchie, Regina
 Manitoba—Dr. A. F. Menzies, Morden (post-humous award)
 Ontario—Dr. J. C. Gillie, Fort William
 Quebec—Dr. H. J. G. Geggie, Wakefield
 New Brunswick—Dr. P.-C. Laporte, Edmundston, and Dr. H. P. O'Neill, St. Andrews
 Nova Scotia—Dr. M. G. Tompkins, Glace Bay
 Newfoundland—Dr. J. I. O'Connell, Curling

Council agreed on an amendment to Chapter VI, Section 1 (c) of the By-laws, which would have the effect of relating the number of Senior Members elected annually to the ordinary membership of certain Divisions, and would increase from 11 to 19 the number so elected. It was also agreed that the President be authorized to confer Senior Membership during his annual tour on such members as could not attend the C.M.A. Annual Meeting.

The membership figures for the C.M.A. in 1956 and 1957 are given below:

	1956	1957
British Columbia	1308	1380
Alberta	1123	1121
Saskatchewan	859	903
Manitoba	837	843
Ontario	5247	5431
Quebec	1190	1414
New Brunswick	420	431
Nova Scotia	449	510
Prince Edward Island	80	82
Newfoundland	93	95
Members-at-large	24	15
Non-resident members	53	52
Military members	21	70
Totals	11,704	12,347

Affiliation in the C.M.A. was granted to the following:

(a) under the terms of By-law Chapter VII-1 (a) The Canadian Life Insurance Medical Officers Association;

(b) under the terms of By-law Chapter VII-1 (b): The Canadian Hearing Society; The Canadian Nurses Association; The Canadian Society of Laboratory Technologists.

It was noted that a liaison committee had been formed with the Royal College of Physicians and Surgeons of Canada.

Council agreed to the plans for the reconstruction and enlargement of C.M.A. House, which is now proving too small for the activities of the Association, but adopted an amendment to the report of the Executive Committee, giving the latter power either to undertake the proposed additions to C.M.A. House, or to go further if feasible and complete the reconstruction by taking down and replacing the original building as well.

Council was informed of the present, highly satisfactory status of the Canadian Medical Retirement Savings Plan. As of December 31, 1957, a total of 1762 participants had been enrolled and registered. As of February 9, 1958, the allocation of deposits in the Plan was:

(a) Fixed annuities	\$ 738,504
(b) Common stock fund	\$1,191,327

Total applicable to 1957 \$1,929,831

Appointment of a nucleus Trusteeship Committee was confirmed consisting of Dr. G. W. Halpenny, Montreal (chairman); Dr. E. W. Mitchell, Toronto; Dr. T. Tweed Samis, Toronto. A list of nine Divisional representatives to act in an advisory capacity to the nucleus Committee was also accepted, and it was agreed that the nucleus Trusteeship Committee should have the final responsibility with respect to investment decisions, and that the advisory Divisional representatives should be non-voting members without responsibility, except when they attend meetings of the nucleus Committee at the request of the Chairman.

The work of the Advisory Committee to the Federal Government was described, in its contacts with the Minister of National Health and Welfare and the Minister of Veterans Affairs. The implications of Bill 320 had been the major subject of discussion with the Minister of National Health and Welfare; in these discussions, the need for classification and definition of professional services involved in "laboratory and other services in aid of diagnosis" was stressed and it was recommended that such services be administered separately by the provincial agencies responsible for insured services. The special needs of teaching hospitals and of medical education were also considered. Since the Regulations under the Act make no specific reference to these matters, it is evident that Divisions should be active in their representations to ensure that agreements and plans will reflect the medical opinion of the province.

A motion concerning payment for medical services to Indians was adopted. It was resolved that the C.M.A. report to the Minister of Health and Welfare respecting this matter with a firm request that: (a) when the fee-for-service method is employed by the

Department of Indian Affairs, payment be made on the basis of the relevant provincial schedule of fees; (b) a uniform manner of payment for these services be developed and the details of this plan be available for information to divisions.

Various items concerned with the World Medical Association were communicated to Council and approved, including the recommendation that wider interest in the work of W.M.A. be stimulated through the medium of the Canadian Supporting Committee, and that the C.M.A. continue to support W.M.A., with representation at General assemblies by two delegates appointed to provide an element of continuity.

A *nominating committee* was elected as follows: Drs. P. Lehmann, J. W. Macgregor, E. R. Stewardson, C. B. Schomperlen, M. S. Douglas, T. J. Quintin, F. C. Jennings, J. R. McCleave, T. A. Laidlaw, and R. O. Josephson.

MONDAY AFTERNOON

The *report of the Honorary Treasurer* was read by Dr. G. W. Halpenny who stated that the total assets at the end of the previous year exceeded \$700,000, representing an increase of approximately \$55,000 on the previous year. Both revenue and expenditure were greater than in the previous year. Full details and a comparative statement of revenue and expenditure will appear in the printed proceedings of General Council in our September 1 issue, together with the balance sheet as audited by the Association's accountants, McDonald, Currie & Co. This report was adopted by the Council.

The *report of the Editor* was also adopted. It contained a report on the Association's two journals, the *Canadian Medical Association Journal* and the *Canadian Journal of Surgery*. In the *Canadian Medical Association Journal*, economies have been made in space by utilizing longer and wider columns. The backlog of original articles has been drastically cut, and the time elapsing between receipt of manuscripts and their publication now compares favourably with other general medical journals. Other sections of the journal have continued without major change.

The *Canadian Journal of Surgery* has now almost completed its first year of quarterly publication; the hard work of the Editorial Board under the chairmanship of Dr. R. M. Janes, of Toronto, and the support of many Canadian surgeons have assured a good start to the new publication.

The *Managing Editor*, Dr. T. C. Routley, reported on the business side of the publications. He stated that expenditures for 1957 were higher than the previous year but that advertising, both in volume and dollar values, was sustained on a sufficiently high level to maintain a healthy financial position. The over-all advertising picture prompted him to say that a loss is not anticipated in 1958. In view of present economic conditions, it was agreed that selection of a starting date for publication of a weekly journal be deferred until such time as the business outlook became more clearly defined.

An adverse balance on the first year's publication of the *Canadian Journal of Surgery* was not expected; the subscription list is not far short of the target of 1000 set as an objective for the first year's operations. This report was adopted.

The C.M.A. representative on the *Joint Commission on Accreditation of Hospitals*, Dr. E. Kirk Lyon, reported on the separation of the Canadian Medical Association from the Joint Committee, and the starting of an all-Canadian accreditation program as of January 1, 1959. Terms of separation were agreed at a meeting of the Joint Commission in April 1958. The C.M.A. is resigning its seat on the Joint Commission on December 31, 1958, and the Canadian Council on Hospital Accreditation will become the sole accrediting agency for Canadian hospitals, though the basic principles and standards of accreditation will remain those approved by the Joint Commission, and close and friendly liaison will be maintained between the two bodies.

Dr. Lyon then reported on the *Committee on Hospital Service and Accreditation*. The new Canadian accrediting agency will be an incorporated body called the Canadian Council on Hospital Accreditation. The problem of accreditation of convalescent and chronic disease hospitals is to be studied by a committee, and a program for survey of Canadian mental institutions is to be worked out in conjunction with the Canadian Psychiatric Association. An effort is being made to interest more small hospitals (25-150 bed capacity) in accreditation. During 1957, 153 hospitals were surveyed in Canada and 107 of these surveys were carried out by Canadian Commission surveyors.

Dr. Lyon noted that authority was provided in Bill 320 for carrying out a government program similar to the Canadian Commission's one. However, Dr. G. D. W. Cameron, Deputy Minister of National Health, assured Council that there was no intention on the part of government of interfering with the Canadian Commission's program. The two reports were adopted.

The *report of the Committee on Approval of Hospitals for the Training of Junior Interns* was read by Dr. A. F. W. Peart in the absence of the chairman, Dr. Gilbert Turner. In April 1958, 72 hospitals were approved for junior intern training, providing a total of 1161 internships. As a result of discussions with the Deans of Medicine of Dalhousie, Laval, and the University of Montreal, arrangements had been made by which undergraduate junior interns at these universities might receive training complying with the requirements of the *Basis of Approval*, thereby receiving full credit for their training through a C.M.A. approved hospital. Amendments would be made in the *Basis of Approval* to incorporate the agreement with these three medical schools. Because of these and other amendments, it was agreed that this booklet should be re-edited and reprinted. It was further recommended that provincial licensing authorities be approached with a view to having all junior interns train in C.M.A. approved hospitals, and that C.M.A. approved hospitals be surveyed to determine the length and type of service through which junior interns rotate in their first year of internship. Dr. J. Gilbert Turner attended later in the session. The work of his committee was warmly commended and the thanks of the Association were transmitted to Dr. Turner personally for his contribution over many years to this important activity.

The *Committee on Cancer* reported that in Nova Scotia a series of refresher courses on cancer was to be organized under the auspices of the postgraduate division, Faculty of Medicine, Dalhousie University. It was agreed to use \$7000 from the Cancer Fund of the C.M.A. for this purpose.

The *Committee on Ethics* made three requests, which were approved by Council. First, in view of the expense and trouble of continually reprinting the C.M.A. Code of Ethics because of minor amendments, it urged Council not to authorize any further changes in the printed Code itself until a new edition was necessary. Changes in the meanwhile could be the subject of a special notice in the Journal. Secondly, it was agreed that there was nothing unethical in billing an insurance carrier for services rendered to an enrolled doctor or his family. Thirdly, it was decided that the International Code of Ethics be prefixed as a prologue to the C.M.A. Code only when the Code is reprinted, and that the Royal College be informed of Council's action.

Dr. R. C. Dickson read the report of the *Committee on Medical Education*, which listed nominations for Canadian contributors to the Second World Conference on Medical Education to be held under the auspices of the World Medical Education in Chicago, August 30-September 4, 1959. The list was approved.

The *Committee on Public Health* drew attention to the problem of assuring to the general population satisfactory recreational facilities and programs, and also of giving stronger medical leadership to the movement for their provision.

The report of the *Committee on Approval of Schools for Laboratory Technologists* was read by Dr. J. W. Macgregor, who stated that four applications for approval as training centres for laboratory technologists had been accepted in the past year, bringing the total of approved schools in Canada to 90. The need for training of large numbers of high-quality laboratory technologists was stressed again.

The report of the *Committee on Industrial Medicine*, prepared by Dr. R. G. Warmington, outlined the results of the first meeting of the Nucleus Committee on March 27, 1958. Council agreed to change the name of the Committee to "Committee on Occupational Medicine". The Committee is to produce a brochure entitled "Standards of Procedure for the Practice of Occupational Medicine".

The *Committee on Pharmacy* suggested that the chairman of the Committee on Pharmacy of the C.M.A. be a member of the Drug Advisory Committee in Ottawa, and recommended that the use of oil of opium should be forbidden.

The *Committee on Maternal Welfare* described activities in the various provinces in surveying maternal and perinatal mortality, and noted that cases of opium poisoning were still occurring.

The *Committee on Nutrition* is preparing a brochure on nutrition for distribution to physicians by the C.M.A.

Dr. H. W. Elliott read the report of the *Committee on the Medical Aspects of Traffic Accidents*. He referred in particular to the pilot study carried out in Montreal by Dr. Ruth McDougall, with financial help from the Ford Motor Company of Canada. This work revealed a great lack of reliable data on the subject, apart from hospital data. Even the latter could be improved. Further scientific studies would need experimental designers and statisticians as consultants in setting up the program. A full-time scientist would be needed to act as co-ordinator of the Canadian Medical

Traffic Accident Research Foundation, which received its federal charter last fall. Meetings with the Canadian Highway Safety Conference were described.

Dr. A. T. Jousse gave the report of the *Committee on Rehabilitation*, which was mainly concerned with the problem of enlisting the interest of medical personnel in rehabilitation. Interest in this subject appears to be greater outside the profession than within. Undergraduates at seven Canadian medical schools are given organized teaching, but the program for graduates is not so impressive, and there is a shortage of candidates for specialist training in rehabilitation, while little has been done to educate clinicians. Psychiatrists in Canada are being urged to submit suitable articles for publication. An attempt is being made to arrange for visits of rehabilitation teams to various centres in order to give demonstrations to medical groups. A handbook giving information on available rehabilitation facilities is also being prepared.

TUESDAY MORNING

Although the report of the *Committee on Public Relations* had been read on the previous evening by Dr. D. Gordon Sinclair, debate was deferred until Tuesday morning. In his report, Dr. Sinclair outlined the objectives of the public relations program of the C.M.A., described the program in action, with particular reference to the public relations workshop arranged on April 18 and 19 and previously reported in this Journal, and stressed that an important public relations problem was the need to provide federal and provincial members of parliament with information on the viewpoint of organized medicine on health insurance.

Another matter relating to the workshop and reported at this time was the stress laid once more on the need for physicians engaged in broadcasts or telecasts to observe carefully the procedures laid down in the Code of Ethics of the C.M.A. and the booklet entitled "A Code of Cooperation". Public relations activities in the Divisions, and relationships with news media in general, with particular reference to the Annual Meeting of the C.M.A. and of its Divisions, were outlined, as was the program for 1958.

In debate, the chief part of the report coming in for discussion was that related to health insurance. The C.M.A. Executive Committee were asked to consider in consultation with the C.M.A. Public Relations Committee a program which would ensure a more effective expression of C.M.A. opinion to the Federal Parliament and the Canadian people in respect of national health legislation.

The General Council then turned their attention to the report of the *Committee on Economics*, read by Dr. R. K. Thomson. Dr. Thomson reported the Committee's activities during the past year, and referred to the establishment of the Bureau of Economics at C.M.A. House. The first project of the Bureau was the administration of the Canadian Medical Retirement Savings Plan, though the Bureau had given valuable assistance in other matters. More adequate communication between Divisions on matters of economics is to be ensured by channelling information from each Division to the Bureau of Economics, whence this material can be sent out in a regular newsletter to all Divisions. It was also recommended by the Committee that a library on medical economics be set

up at C.M.A. House and that the staff of the Bureau of Economics endeavour to secure reports from all the professional affiliated societies concerning meetings, resolutions, and studies.

Progress in the relative values study was reported, under the guidance of a local committee of five (two from university circles and three from private non-university practice), with an eminent physician as chairman of the committee. A proforma has been devised which will be forwarded to 300-400 physicians across Canada for analysis of a number of procedures. Selection of participating physicians will be made at Divisional level, and the group might ultimately comprise 3-4% of the medical population, representing all fields of medical practice.

There was much discussion of the question of arbitration and negotiation between physicians and employing bodies. Dr. Thomson read a supplementary document on arbitration and negotiation, pointing out the major differences in employer-employee relationships between physicians practising medicine and other employees presently subject to compulsory arbitration. This document suggested that it would be more difficult to negotiate compulsory arbitration arrangements for the profession if payments were being made on a fee-for-service basis. The Committee on Economics suggested the insertion in the Statement of Policies and Principles on Health Insurance in Canada of a new paragraph emphasizing the need for any member or group of members of the medical profession to have the same fundamental rights as other citizens in choosing the type and location of practice and in negotiating agreements covering methods of remuneration, conditions of professional service and modification or termination of contracts. To implement this statement, the Committee recommended that all members of the profession and governments recognize the C.M.A. and its Divisions, with L'Association des Médecins de Langue Française du Canada when indicated, as the negotiating body of the medical profession. A supplementary resolution led to the approval in principle of acceptance by the C.M.A. or its Divisions of the responsibility for collective bargaining on behalf of salaried physicians. Council also approved the provision of assistance by the C.M.A. to Divisions, on request, for the development or alteration of division-government agreements or contracts. The Committee did not consider that there was any indication that physicians should be active members of a union, since organized medicine could assume the responsibility for improving the position of any physicians.

In relation to health insurance, it was agreed by Council that the principle should be re-endorsed of administration of health insurance plans at the provincial level by a commission representative of those persons providing and receiving the service. It was also agreed that whenever medical services are provided to persons whose medical care is a responsibility of government or other third party, the professional component of this care may be compensated for separately, and preferably in accord with an agreement based on the fee-for-service principle. It was felt that the maintenance of standards of health care and the control of abuses and inequities could best be carried out by professional representation on provincial and local committees advisory to the health insurance authorities.

A long section of the report dealing with the activities of Trans-Canada Medical Plans was accepted as information and not debated, in view of the setting up of the new committee to enquire into the whole situation. It was announced that Dr. D. A. Thompson, of Bathurst, N.B., is to be the new chairman of the T.C.M.P. Commission.

The *Nominating Committee* then reported the results of its work. After satisfaction had been expressed at the acceptance by H.R.H. The Duke of Edinburgh of the Presidency of the Canadian and British Medical Associations, it was announced that his deputy for the year 1959-60 would be Dr. E. K. Lyon of Leamington, Ontario, who will fulfil during any unavoidable absence of the Duke the duties of the President in Canada. In the years preceding and following this term he will carry out the duties of President-Elect and Past-President on the same basis. The Chairman of General Council, Dr. Norman H. Gosse, was re-elected. Although Dr. Gosse has served for a longer term than usual, it was felt that in view of important events which may tend to take place in the next year, and his great experience in the work, it would be advisable to make no change. Dr. G. E. Halpenny was re-elected Honorary Treasurer.

Dr. Max Klotz read the report of the *Committee on By-Laws*, and certain amendments both to the Act of Incorporation and to the By-Laws were approved by Council. These amendments, which have been published in our April 15 issue, concern changes related to the objectives of the Association, the election of senior members, the functions and organization of sections, and the organization and meetings of General Council.

DINNER TO COUNCIL

The Council of the Canadian Medical Association were the guests of the New Brunswick Division at dinner on June 17 at the Nova Scotian Hotel. The chairman was Dr. F. C. Jennings of Saint John, President of the New Brunswick Division, who welcomed the guests, and later acted as commentator on the musical program. The toast to the Canadian Medical Association was proposed by Dr. Arthur L. Murphy of Halifax, President of the Nova Scotia Division, who paid a tribute to the strength of organized medicine in Canada and emphasized once more the need to preserve the fundamental freedoms in medicine. Dr. Morley A. R. Young of Lamont, Alberta, President of the Canadian Medical Association, responded to this toast, giving some historical notes on previous meetings in Halifax, including one resolution passed by the Canadian Medical Association many years ago in which specialists were referred to as "irregular practitioners".

A musical program followed. The first contribution came from Mademoiselle Marie-Germaine LeBlanc of Edmundston, New Brunswick, who sang Musetta's song from *La Bohème* and an English ballad entitled "Think on Me". Mr. Paul Murray of Saint John contributed various items on the organ including the trumpet voluntary by Jeremiah Clarke, usually ascribed to Purcell, a hornpipe from Handel's *Water Music*, an



Dave Thomas, Halifax

At the dinner to General Council (left to right): The President-Elect, Dr. A. F. VanWart, and Mrs. VanWart; the President, Dr. M. A. R. Young, and Mrs. Young.

elegy and a tuba tune by modern composers, and a selection from *Carousel*. Finally Dr. Ken Rodger and Dr. Dave Moir of Saint John supplied light entertainment with a fiddle, a piano and some excellent jokes.

CHURCH SERVICES

On Sunday, June 15, the official Protestant service of the Canadian Medical Association was held at St. David's Presbyterian Church, Grafton Park, Halifax. The lessons were read by the President of the Association, Dr. Morley Young, and the Chairman of Council, Dr. Norman Gosse. The sermon by Rev. Frank Lawson was appropriately enough on the general theme of the relationship between religion and healing.

The Roman Catholic service was held at St. Mary's Basilica, Halifax, where high mass was celebrated at 10.30 a.m.

COLOUR TELEVISION SCIENTIFIC PROGRAM

As a special feature of the 91st Annual Meeting of the C.M.A., a two and a half day program of colour television had been arranged for Monday, Tuesday and Wednesday. For this, the Association was indebted to Smith Kline and French Corporation who made the program possible. The programs were telecast to the ballroom of the Nova Scotian Hotel from the Victoria General Hospital, and thanks are due to the Superintendent of the Hospital, Dr. C. M. Bethune, the Board of Commissioners and many members of the staff of that hospital who participated in the programs. Details of the program had been arranged by the Halifax Program Committee under the chairmanship of Dr. W. K. House. Topics covered by the program included pulmonary lesion diagnosis, pulmonary resection, diagnostic methods in evaluation of patients for cardiac surgery, examination for sciatica,

hip prosthesis, diagnosis and treatment of torn knee cartilage, inguinal herniorrhaphy, retropubic prostatectomy, diagnostic and therapeutic use of radioactive iodine in thyroid disease, surgical treatment of rodent ulcer, corrective treatment of low back pain, vaginal examination, conization of cervix, and finally a dermatological clinic.

COLOUR TV PUBLIC FORUM

On Sunday evening at 9 p.m. there was a simultaneous telecast in colour and in black and white of a surgical operation. The program was televised on a closed circuit in colour to the medical profession, and in black and white to the general public. The operation for patent ductus arteriosus was performed by a local surgeon and his team, while a panel of three commentators filled in the intervals between excursions to the operating room. The operation, which was performed at the Victoria General Hospital, was accomplished without a hitch. The telecast was arranged by courtesy of Smith Kline and French Corporation.

GET-TOGETHER COFFEE PARTY

A useful innovation at the Annual Meeting was the coffee party arranged in the Nova Scotian Hotel on Sunday night, June 15, by courtesy of the New Brunswick Division, to enable visiting members of Council to meet their Haligonian counterparts. The guests were received by the President-Elect, Dr. A. F. VanWart, and his wife.

CANADA DAY LUNCHEON

Monday, June 16, was named as Canada Day. The guest speaker at luncheon in the Nova Scotian Hotel was the Honourable J. Waldo Monteith, Minister of National Health and Welfare, Ottawa. Mr. Monteith began by praising the willingness of the Canadian Medical Association to co-operate with government as regards the hospital insurance and diagnostic services program. At the moment, it looked as if five provinces (British Columbia, Alberta, Saskatchewan, Manitoba and Newfoundland) would have their schemes in operation by July 1, 1958. Mr. Monteith sketched in some general details of the program, pointing out that it was not a single national project but "a series of provincial projects, uniform as to essentials but differing in many respects". However, the insurance schemes all had some basic features: they must be universally available to residents of a province on uniform terms and conditions, they must provide machinery for assuring high standards of hospital care and they must provide certain basic in-patient services, including laboratory, radiological and other diagnostic procedures together with the necessary interpretations, certain drugs, and services rendered by persons receiving remuneration therefor from the hospital. Radiotherapy and physiotherapy facilities must be included where

available. Optional services included provision of certain drugs and of out-patient services.

In discussing the greater responsibilities for proper hospital utilization which will fall on the man in the street, Mr. Monteith said that the average citizen would be relieved of worry over meeting basic costs of hospital care, but in return must play a larger role with regard to hospitals in his locality. He also said, "The present pattern of hospital ownership will be maintained and nothing will be done to interfere with the independence which these institutions have traditionally enjoyed in Canada."

As regards the program's impact on the medical profession, Mr. Monteith said, "There is one thing I want to make crystal-clear at the very outset. As far as I am personally concerned, I will never recommend to my colleagues in the Government anything which in any way could interfere with the patient-doctor relationship. This, to my mind, is one of the most valuable aspects of Canada's health efforts, and I, for one, would do nothing to jeopardize or alter it in any shape or form." He spoke of aspects of the program causing concern to physicians, mentioning specific provisions in the Act to which the C.M.A. had drawn his attention.

"I refer, for example, to Section 2 (f) (ix) to the effect that in-patient services include 'services rendered by persons who receive remuneration therefor from the hospital'. For the most part, this clause is meant to apply to regularly employed hospital personnel such as engineers, nurses, dietitians, physiotherapists and so on. It also covers the employment of interns and residents. With regard to other staff physicians, however, it includes, as you would expect, those engaged in hospital administration or in the medical direction of programs. It was not designed—and I want to emphasize this point—to apply to doctors furnishing clinical services to individual patients.

"In this same general area, I might mention Section 2 (f) (x) which permits the provision of such additional services as are specified in an agreement. This clause is designed to facilitate the expansion of insured services within the general framework of hospital care—I repeat, hospital care. It might, for example, be used to furnish specialized services in connection with a province-wide program of rehabilitation. Such services would, of course, have to be made universally available to residents of a province in order to qualify as an insured item.

"A third clause of the Act to which I might refer in this connection is Section 2 (f) (iii) which provides for 'laboratory, radiological and other diagnostic procedures together with the necessary interpretations'. By including as insured services the procedures and interpretations described in this paragraph, we have been guided by the view that these form integral components of good hospital care. Good hospital care is, of course, the primary goal of the program and it was therefore considered essential that these items be incorporated within its general scope.

"As far as the intent of this particular section is concerned, I would point out that it does not apply to clinical procedures carried out by a physician in establishing a diagnosis. In this connection, I have in mind such things as bronchoscopy, gastroscopy, sigmoidoscopy, pneumoencephalography, D & C, and eye examinations. Such procedures are obviously aspects



Dave Thomas, Halifax

At the luncheon on Canada Day, June 16 (left to right): Dr. N. H. Gosse, Chairman of General Council and Executive Committee, C.M.A.; the Hon. J. Waldo Monteith, Minister of National Health and Welfare; and Dr. A. D. Kelly, General Secretary, C.M.A.

of a medical care program and would have no place in a hospital care scheme."

Referring to laboratory, radiological and other procedures carried out on the physician's behalf, he said: "Obviously the physician will in many cases also require interpretations of these procedures from, say, pathologists and radiologists. Where such interpretations are necessary, they will of course be considered as insured items in the same way as the tests themselves."

He then emphasized strongly that the above specific sections of the Act did not represent a device for the introduction of a medical care scheme. They simply constituted adjuncts to good hospital care.

Turning to medical education, the Minister assured his audience that both federal and provincial authorities were keenly aware of the need for maintaining traditional patterns in medical training, and that the hospital was essential for this. The two senior levels of government had fully recognized the validity of the three points (adequate number of teaching beds, longer stay in teaching hospitals, and higher cost of operation) raised in the brief of the Association of Canadian Medical Colleges (this *Journal*, May 15 issue).

Federal support would continue as before for research, and in certain circumstances would receive some aid from the scheme.

While the doctor would benefit from the program, he would have to assume greater responsibility with regard to utilization of hospital facilities than in the past; however, the government was "not unaware of the pressures to which practitioners will no doubt be subjected in this connection". Turning to responsibilities of organized medicine, he stated that "Since it is the physician who in the last analysis determines whether or not a patient is admitted to these institutions, it will be up to the profession to see that its members act responsibly in this regard." The strengthening and expansion of medical staff organizations in hospitals would represent a logical avenue of approach to this problem. Given leadership from the profession, the program should raise and not lower hospital standards.

Finally, the Minister called on the C.M.A. and its members to accept the challenge which the scheme presents.

NOVA SCOTIA DAY LUNCHEON

Council was entertained to a pleasantly informative after-dinner speech by Premier Stanfield on Nova Scotia Day (June 17). The province's past was briefly reviewed and the speaker reminded the audience that this part of the country had witnessed continuous white settlement since 1605. The figure of Sir William Alexander, gentleman adventurer, was evoked in connection with the Royal Charter granted to him in 1621. In its present state, this "new Scotland" is much smaller than it was originally, as it once included Prince Edward Island and parts of the province of Quebec and New Brunswick. Cape Breton acted as a satellite which wandered in and out of orbit. The origins of the racial components of the present population include French, English, Scottish and Irish; a strong minority of citizens are of German and Dutch descent.



Dave Thomas, Halifax

At the luncheon on Nova Scotia Day, June 17 (left to right): Dr. N. H. Gosse, Chairman of General Council and Executive Committee, C.M.A.; Dr. A. L. Murphy, President, Nova Scotia Division; the Hon. Robert L. Stanfield, Premier of Nova Scotia; and Dr. A. F. VanWart, President-Elect, C.M.A., 1957-58.

Mr. Stanfield also traced the broad outline of the history of government in the province and gave a short but picturesque sketch of social life in Halifax in the days of Prince Henry.

The Premier was introduced by the President of the New Brunswick Division, Dr. A. L. Murphy, and thanked by Dr. H. J. Devereux.

NEW BRUNSWICK DAY LUNCHEON

On Wednesday, the luncheon at the Nova Scotian Hotel was arranged by the Province of New Brunswick. Dr. F. C. Jennings, President of the New Brunswick Division, was in the chair and the guest speaker was the Honourable J. F. McInerney, M.D., Minister of Health and Social Services for the Province of New Brunswick. The guest speaker paid a tribute to Dr. A. F. VanWart, giving some biographical details of the President-Elect, who was born and bred in Fredericton, had his medical education in Toronto, and returned in 1923 to Fredericton, where he has practised ever since. Dr. McInerney said that it was 29 years since the New Brunswick Division last played host to the Canadian Medical

Association. He compared conditions in New Brunswick at that epoch with conditions prevailing today, noting the striking progress achieved as exemplified by progress in health matters. He recalled that New Brunswick had the first Minister of Health in the British Empire, and illustrated New Brunswick achievements in health by copious quotations from vital statistics.

PRINCE EDWARD ISLAND DAY LUNCHEON

At the P.E.I. Day luncheon on Thursday, June 19, Dr. L. Prowse of Charlottetown, President of the P.E.I. Division, was in the chair and the guest speaker was the Honourable Alexander W. Matheson, Q.C., Premier of Prince Edward Island. Premier Matheson announced that he was going to preach a sermon on two subjects—politics and health. After saying that he no longer believed in a union of the four Atlantic provinces but rather in their separate but coordinated activity, he discussed the value and function of the senate. Turning to health, he recalled that he was the P.E.I. Minister of Health ten years previously, when federal health grants were just starting. Saying that Canada was inevitably heading towards the concept of the welfare state, he expressed his opposition to "government medicine" but pointed out the need for the medical profession to ensure that a few practitioners did not impair the reputation of the whole profession.

DANCE PARTY

The pre-eminence of Prince Edward Island in square dancing is such that it will come as no surprise to hear that the gala night which they had arranged to wind up Prince Edward Island Day (Thursday, June 19) consisted to a large extent of square dancing mixed with ordinary ballroom dancing for those with less energy. Don Messer and his Islanders provided the music for a thoroughly satisfactory party arranged with excellent co-operation from the Royal Canadian Navy at the Gymnasium, H.M.C.S. *Stadacona*. Several hundred physicians of all ages and their wives improved their circulatory systems in a vigorous and most enjoyable evening of fun.

SCIENTIFIC EXHIBITS

This year, the scientific exhibits at the annual meeting were located in the Exhibit Hall (Classroom 27) of the Nurses' Residence, Victoria General Hospital. The exhibits included the following:

The Canadian Diabetic Association had an exhibit under the direction of Dr. W. R. Feasby, Medical Director of the Association. The Canadian Arthritis and Rheumatism Society had a similar exhibit explaining the objectives of the Society and the methods employed in pursuing them. Dr. Paul David, Director

of the Institute of Cardiology, Montreal, had an exhibit portraying three aspects of heart disease—coloured enlargements of various heart specimens; heart catheterization and selective angiocardiology; and experience with anticoagulants. Dr. Arthur H. Shears of Halifax had an exhibit on the management of hemiplegia and Dr. Harold Elliott of Montreal General Hospital one on the epidemiological approach to traffic accidents. The Canadian Cancer Society had a general educational exhibit. Dr. J. O. Godden of Dalhousie University showed the relationship of cancer of the lung, emphysema and other diseases to smoking. Dr. Donald Mitchell of Westmount, P.Q., had an exhibit on hypersensitivity in patients. The Canadian Red Cross Blood Transfusion Service had a display on blood transfusion, and the Canadian Tuberculosis Association one on tuberculosis testing. Lastly, Dr. Guy Joron of the Montreal General Hospital demonstrated the increased incidence of pyelonephritis in diabetes, and Dr. Carl Tupper of Dalhousie University had an exhibit on the multi-disciplinary study of spontaneous and habitual abortion.

THE PHYSICIANS' ART SALON

The entries for the 1958 Physicians' Art Salon were exhibited to members of the C.M.A. and the general public in the spacious Art Room of the Halifax Memorial Library from June 17 to 20. The Salon was sponsored by Frank W. Horner, Ltd. for the 14th consecutive year; thanks are due to them for their sponsorship. A jury consisting of Rev. Ambrosius Czako, Ph.D., Donald C. Mackay, F.R.S.A., and LeRoy Zwicker, N.S.A., made the following awards:

Traditional Fine Art: 1st Prize: "Still Life"—Dr. Elizabeth Young, Toronto, Ont.; 2nd Prize: "White Mudcreek"—Dr. M. F. Newell, Edmonton, Alta.; *Awards of Merit:* "Serenity"—Dr. D. J. Tonning, Halifax, N.S.; "Butane Spheres"—Dr. F. Dean Kemper, Halifax, N.S.; "Antiques"—Dr. W. W. Coppinger, Baie d'Urfée, Que.; "Printemps"—Dr. Paul Ouellet, Quebec, Que.; "Florida"—Dr. F. B. Bowman, Hamilton, Ont.; "Chapel Point"—Dr. A. D. Pollock, Owen Sound, Ont.; "Reading a Theory About T.B."—Dr. G. J. Groh, St. Basile, N.B.

Palette Club: "Still Life with Indian Corn"—Dr. Ella Evans, West Vancouver, B.C.; "Alla Sua Finestra"—Dr. Paul Larivière, Montreal, Que.

Portrait: 1st Prize: "Dodi"—Dr. M. F. Newell, Edmonton, Alta.; 2nd Prize: "Betty"—Dr. E. V. Currie, Dorval, Que.; *Award of Merit:* "Hannah"—Dr. J. B. McIlraith, Thistle-town, Ont.

Contemporary: 1st Prize: "Composition No. 1"—Dr. P. Marie, St. James, Man.; 2nd Prize: "Ranch Country"—Dr. G. H. H. Booth, Agassiz, B.C.; *Awards of Merit:* "Three Wise Men"—Dr. R. V. Worling, Hamilton, Ont.; "Fish 'n' Floats"—Dr. G. Harvey Agnew, Toronto, Ont.; "Rocks on the Shore"—Dr. T. E. Briant, Welland, Ont.

Monochromes: 1st Prize: "Netherland"—Dr. G. Knoll, Haileybury, Ont.; 2nd Prize: "Rosalind and Her Dog"—Dr. Douglas Leslie, Milton, Ont.; *Awards of Merit:* "Light and Shadow"—Dr. B. Z. Steine, Montreal, Que.; "White Twigs"—Dr. A. L. Crewson, Cornwall, Ont.; "The Bait Fishers"—Dr. James Smith, The Pas, Man.

Colour Transparencies: 1st Prize: "The Philosophers"—Dr. R. T. Vernon, Windsor, Ont.; 2nd Prize: "The Rose Window"—Dr. Peyto Slatter, Reddendale, Ont.; 3rd Prize: "Fireworks Festival"—Dr. A. J. D. Dale, Winnipeg, Man.; *Awards of Merit:* "Delicious"—Dr. Frank N. Boone, Hamilton, Ont.; "Water Baby"—Dr. R. Rabinovitch, Montreal, Que.; "Under the Lights"—Dr. C. M. Dewar, O'Leary Station, Prince County, P.E.I.; "Pattern of Bars"—Dr. Elizabeth Mackay, Toronto, Ont.; "Rainbow's End"—Dr. J. G. Beatty, Uranium City, Sask.; "Night Lights"—Dr. Pierre Fauteux, Montreal, Que.; "The Biologists"—Dr. F. C. Fraser, Montreal, Que.; "Thomas"—Dr. A. G. S. Heathcote, Willowdale, Ont.; "Golden Fingers"—Dr. C. M. Horner, Cobourg, Ont.; "Majorcan Coast"—Dr. T. D. Bain, Vancouver, B.C.

Palette Club: "Drying Nets"—Dr. H. W. Schwartz, Bedford, N.S.

LADIES' PROGRAM

Under the guidance of Mrs. Arthur VanWart, the Ladies' Committee arranged an interesting program.

To enable the ladies to become acquainted, the New Brunswick Division held a coffee party on Sunday evening before the main meetings. On Monday afternoon they drove to the Citadel, where they had afternoon tea. On Tuesday, favoured by good weather, they enjoyed a very pleasant drive to one of the beauty spots in the surrounding countryside of Halifax, Peggy's Cove, where box-lunches were provided. On Thursday there was a luncheon at the Lord Nelson Hotel and on Friday the group had afternoon tea at Dalhousie University.

Morning coffee was served daily in the Bedford Room at the Nova Scotian Hotel and on Friday morning a special farewell coffee party was held at the Lord Nelson Hotel.

The ladies also took part in all the social activities arranged for members and wives. These are reported under the main social events.

GOLF

In the annual C.M.A. golf tournament, the Ontario Cup was won by Dr. A. R. McGee of Toronto, who had the best low gross score. Dr. H. E. McLean of Halifax had the second low gross score. Other prize-winners were: Dr. R. D. Baird, Fredericton; Dr. K. R. Crawley, Scarborough; Dr. Victor Johnston, Toronto; Dr. E. C. McCoy, Vancouver, and Dr. Pat Rose of Edmonton.

The Eaton Trophy was won by Mrs. C. R. Bunn of Red Deer.

INCOMING EXECUTIVE COMMITTEE

The incoming Executive Committee of the C.M.A. met in the Nova Scotian Hotel on Thursday, June 19.

The members of the Committee are as follows:

President.—Dr. A. F. VanWart, Fredericton.

Immediate Past President.—Dr. M. A. R. Young, Lamont.

President-Elect.—H.R.H. The Duke of Edinburgh.
Deputy to the President-Elect.—Dr. E. Kirk Lyon, Leamington.
Chairman of the General Council and the Executive Committee.—Dr. Norman H. Gosse, Halifax.
Honorary Treasurer.—Dr. G. W. Halpenny, Montreal.

DIVISIONAL REPRESENTATIVES

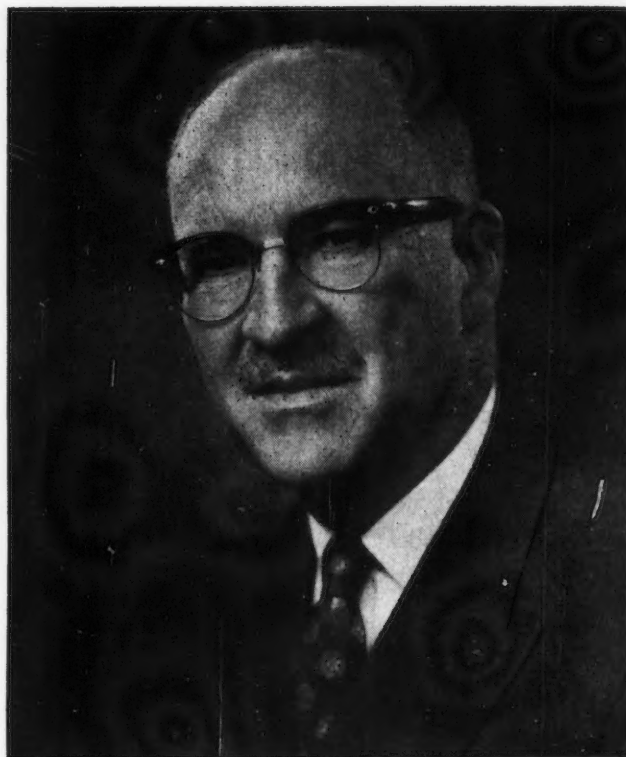
British Columbia.—Dr. F. A. Turnbull, Vancouver (alternate—Dr. P. O. Lehmann, Vancouver).
Alberta.—Dr. A. A. Haig, Lethbridge (alternate—Dr. J. W. Macgregor, Edmonton).
Saskatchewan.—Dr. E. R. Stewardson, Moose Jaw (alternate—Dr. H. D. Dalglish, Saskatoon).
Manitoba.—Dr. R. W. Richardson, Winnipeg (alternate—Dr. A. M. Goodwin, Winnipeg).
Ontario.—Dr. Lorne Whitaker, St. Catharines; Dr. M. S. Douglas, Windsor; Dr. W. W. Baldwin, Brooklin (alternate—Dr. W. W. Wible, Dryden).
Quebec.—Dr. Renaud Lemieux, Quebec; Dr. T. J. Quintin, Sherbrooke (alternate—Dr. Georges Leclerc, Montreal).
New Brunswick.—Dr. G. M. White, Saint John (alternate—Dr. Paul Melanson, Moncton).
Nova Scotia.—Dr. R. O. Jones, Halifax (alternate—Dr. A. L. Murphy, Halifax).
Prince Edward Island.—Dr. J. A. McMillan, Charlottetown (alternate—Dr. R. G. Lea, Charlottetown).
Newfoundland.—Dr. C. D. Kean, St. John's (alternate—Dr. R. J. Simms, St. John's).

OFFICIALS

General Secretary.—Dr. A. D. Kelly, Toronto.
Assistant Secretaries.—Dr. A. F. W. Peart, Mr. B. E. Freamo and Mr. K. C. Cross, Toronto.
Editor.—Dr. S. S. B. Gilder, Toronto.
Managing Editor.—Dr. T. C. Routley, Toronto.
Assistant Editor.—Dr. M. R. Dufresne, Toronto.

After the roll call and introduction of new members, the Executive Committee elected Dr. N. H. Gosse as its chairman. The following appointments were then made to Standing Committees:

Advisory Committee to the Federal Government.—Dr. N. H. Gosse (Chairman); Dr. R. K. Thomson, Edmonton; Dr. J. R. Lemieux, Quebec; Dr. R. W. Richardson, Winnipeg; Dr. P. Lehmann, Vancouver; Dr. A. F. VanWart (*ex officio*); Dr. A. D. Kelly (*ex officio*); Dr. E. K. Lyon, Leamington.
Committee on Archives.—Dr. J. B. Ritchie, Regina.
Committee on Awards, Scholarships and Lectures.—Dr. R. M. Janes, Toronto.
Committee on By-laws.—Dr. M. O. Klotz, Ottawa.
Committee on Cancer.—Dr. H. K. Fidler, Vancouver.
Central Program Committee.—Dr. E. F. Brooks, Toronto.
Committee on Economics.—Dr. R. K. Thomson, Edmonton.
Committee on Ethics.—Dr. Wallace Wilson, Vancouver.
Committee on Hospital Service and Accreditation.—Dr. N. Levinne (Chairman), Toronto; Dr. D. A. Thompson, Bathurst; Dr. E. K. Lyon, Leamington; Dr. B. H. McNeel, Toronto.
Committee on Income Tax.—Dr. R. M. Mitchell (Chairman), Sudbury; Dr. F. G. Allison, Winnipeg; Dr. N. J. Blair, Vancouver; Dr. G. E. Chalmers, Fredericton; Dr. G. W. Halpenny, Montreal; Dr. M. O. Klotz, Ottawa; Dr. T. J. Quintin, Sherbrooke; Dr. A. D. Kelly, Toronto.
Committee on Occupational Medicine.—Dr. R. G. Warmin-ton, Niagara Falls.
Committee on Approval of Hospitals for the Training of Junior Interns.—Dr. Ian MacDonald (Chairman), Toronto; Dr. J. F. C. Anderson, Saskatoon; Dr. L. O. Bradley, Winnipeg; Dr. G. E. Chalmers, Fredericton; Dr. Roger Dufresne, Montreal; Dr. Nathan N. Levinne, Toronto; Dr. R. A. Seymour, Vancouver.
Committee on Approval of Schools for Laboratory Technologists.—Dr. J. W. Macgregor (Chairman), Edmonton; Dr. W. L. Donohue, Toronto; Dr. W. J. Deadman, Toronto; Dr. H. Starkey, Montreal; Dr. D. W. Penner, Winnipeg; Dr. D. F. Moore, Saskatoon; Dr. J. Eden, Vancouver; Dr. Carlton Auger, Quebec.



Ashley & Crippen, Toronto

Dr. E. Kirk Lyon, Leamington, Ont., who will deputize for the 1959-60 President, H.R.H. The Duke of Edinburgh.

Committee on Maternal Welfare.—Dr. T. Primrose, Montreal.
Committee on Medical Education.—Dr. R. C. Dickson, Halifax.
Committee on Nutrition.—Dr. J. F. McCreary, Vancouver.
Committee on Pharmacy.—Dr. K. J. R. Wightman, Toronto.
Committee on Public Health.—Dr. R. G. Cadham, Winnipeg.
Committee on Public Relations.—Dr. E. F. Crutchlow, Montreal.
Committee on Rehabilitation.—Dr. A. T. Jousse, Toronto.
Committee on the Medical Aspects of Traffic Accidents.—Dr. H. W. Elliott, Montreal.

The following were elected to Special Committees:

Liaison Committee with L'Association des Médecins de Langue Française du Canada.—Dr. R. Vance Ward (Chairman), Montreal; Dr. J. H. M. Rice, Campbellton, N.B.; Dr. Georges Leclerc, Montreal.
Committee on C.M.A. Organization.—Dr. F. A. Turnbull (Chairman), Vancouver (with power to add).
Editorial Board.—Dr. S. S. B. Gilder (Chairman), Toronto; Dr. M. H. Brown, Toronto; Dr. D. E. Cannell, Toronto; Dr. J. H. Ebbs, Toronto; Dr. R. F. Farquharson, Toronto; Dr. W. V. Johnston, Toronto; Dr. H. E. MacDermot, Montreal; Dr. Burns Plewes, Toronto; Dr. T. C. Routley, Toronto; Dr. A. B. Stokes, Toronto; Dr. K. J. R. Wightman, Toronto.
Finance Committee.—Dr. G. W. Halpenny (Chairman), Montreal; Dr. J. G. Howlett, Montreal; Dr. D. Sclater Lewis, Montreal; Dr. L. Gérin-Lajoie, Montreal.
House Committee.—Dr. T. C. Routley, Toronto (with power to add).
Committee on International Relations.—Dr. Margaret Gosse (Chairman), Halifax; Dr. C. B. Stewart, Halifax; Dr. R. C. Dickson, Halifax.
Special Committee on Principles.—Dr. C. B. Stewart, Halifax.
Staffing Committee.—Dr. Murray Douglas, Windsor; Dr. Lorne Whitaker, St. Catharines; Dr. T. C. Routley, Toronto.
Trusteeship Committee.—Dr. G. W. Halpenny, Montreal; Dr. Tweed Samis, Toronto; Dr. E. W. Mitchell, Toronto.
Relative Values Study, Economics.—Dr. R. M. Janes, Toronto (Chairman of Steering Committee, with power to select).

The following were named as C.M.A. representatives on outside bodies:

- Association of Canadian Medical Colleges*—Dr. R. C. Dickson, Halifax.
Canadian Commission on Hospital Accreditation—Dr. N. Levine, Toronto; Dr. D. A. Thompson, Bathurst; Dr. E. K. Lyon, Leamington; Dr. B. H. McNeel, Toronto.
Liaison Committee, Canadian Pharmaceutical Association—Dr. J. K. W. Ferguson, Toronto; Dr. K. J. R. Wightman, Toronto; Dr. J. R. Lemieux, Quebec.
Defence Medical and Dental Services Advisory Board—Dr. T. E. Holland, Winnipeg; Dr. Harry S. Morton, Montreal; Dr. A. D. Kelly, Toronto; Dr. A. F. W. Peart, Toronto (alternate).
Dominion Council on Nutrition—Dr. J. F. McCreary, Vancouver.
Health League of Canada—Dr. F. R. Griffin, Toronto.
Joint Commission on Accreditation of Hospitals—Dr. E. K. Lyon, Leamington (until December 31, 1958).
Associate Committee on Medical Research, National Research Council—Dr. M. A. R. Young, Lamont.
Canadian Commission on Nursing—Dr. H. T. Ewart, Hamilton; Dr. William Storrar, Montreal; Dr. A. F. W. Peart, Toronto; Dr. M. A. R. Young, Lamont.
Physicians' Art Salon—Dr. G. E. Tremble (Chairman), Montreal; Dr. G. Harvey Agnew, Toronto; Dr. Arthur Murphy, Halifax.
Canadian Society of Radiological Technicians—Dr. E. A. Petrie, Saint John.
National Advisory Committee on Rehabilitation of Disabled Persons—Dr. A. T. Jousse, Toronto.
Science Abstracting Commission, National Research Council—Dr. S. S. B. Gilder, Toronto.
Victorian Order of Nurses—Dr. J. H. B. Hilton, Ottawa.
Representative to T.C.M.P.—Dr. R. Richardson, Winnipeg.

Messrs. McDonald, Currie and Co. were reappointed Association auditors, and the Royal Trust Company, Toronto, was reappointed as financial adviser.

The Executive Committee then dealt with various items of business referred from General Council. These included items to be brought to the attention of the Minister of National Health and Welfare (for example, the unsatisfactory nature of present methods of payment for professional services to Indians; the new status of the Canadian Council on Hospital Accreditation and its relationship to certain terms in the Hospital Insurance and Diagnostic Services Act), and matters related to the report of the Committee on Economics (problems of collective bargaining; setting up of a newsletter service from the Bureau of Economics to Divisions, and of a library on medical economics at C.M.A. House).

The C.M.A. solicitors are to be instructed to take the necessary steps to petition Parliament as regards amendment of the Act of Incorporation.

Consideration is being given to reorienting the C.M.A. public relations program to ensure more effective expression of C.M.A. opinion on national health legislation to the Federal Government and the Canadian people.

The Committee on Rehabilitation will be asked to prepare a memorandum for the Executive Committee, with specific suggestions for future action.

The new special committee on Trans-Canada Medical Plans stated its objectives as: (1) the development of a national co-ordinating agency for the advancement of prepaid medical care plans in Canada; (2) delineation of the proper position and role in policy-making of the C.M.A. and its Divisions for the betterment of health care in Canada. It also outlined the proposed methods of investigation.

The next meeting of the Executive Committee was set for Friday and Saturday, October 31 and November 1, 1958, at C.M.A. House, Toronto.

SCIENTIFIC PROGRAM

SECTION OF OBSTETRICS AND GYNÆCOLOGY

At the session on June 18, Dr. Joseph Tanzman of Saint John spoke on "The Incompetent and Obstructive Cervix". The causes of cervical incompetence and cervical obstruction were enumerated and the operative measures for their correction were explained. He described an interesting case in which there was an aperture in the anterior lip of the cervix through which the patient had aborted when she was five months pregnant. This defect, which was thought to be congenital in origin, was subsequently repaired. The patient then became pregnant again and this time carried the pregnancy to term, when she was delivered vaginally. Dr. Tanzman emphasized the importance of care in any cervical manipulation. The patency of the cervix should be determined after it has been cauterized. These follow-up examinations should include the passage of a uterine sound to prove adequate patency.

Dr. John H. Maloney, Charlottetown, gave an interesting paper on the management of breech deliveries. He stressed the fact that fetal loss in breech presentation was still much too high. In these cases, attention to detail, the type of manoeuvre and the time at which

it is applied are all important in obtaining successful results. Radiographic pelvimetry, especially determination of the size and shape of the pelvis by lateral views, is essential during the prenatal period. Preparation of the patient for labour so that she may co-operate at the time of delivery will result in less interference and fewer complications. In assisted breech deliveries and breech extractions, help is absolutely necessary; another doctor and a nurse must be present to give an anæsthetic and to assist. Forceps application to the aftercoming head is the best method of delivery. If the baby appears to be large, serious consideration should be given to performing a Cæsarean section, even though the pelvic measurements are normal.

Dr. Douglas Marshall of Victoria spoke on mid-pelvic dystocia. Illustrative case histories showed that cephalo-pelvimetry during pregnancy could not be relied upon as a method of prognosis. The obstetrician must interpret the radiographs in the light of the clinical examination and the history. Vaginal examination should be performed early in labour in patients who have borderline pelves or in whom the attitude of the fetal head is unfavourable. By preparing the patient for her confinement, uterine inertia can be almost eliminated. If it should occur, the patient must have a complete re-assessment after 10 or 12 hours of

labour without progress. Dr. Marshall found Pitocin drip to be disappointing in cases of primary uterine inertia.

Dr. R. A. H. Kinch of London, Ont., spoke on fetal hazards in the management of diabetic pregnancy. In his series of 51 pregnant diabetics, there were no maternal deaths and the fetal loss was 8. He made a plea for the glucose tolerance test in all pregnant women with a history of repeated abortion, stillbirths and large babies, and in whom glycosuria had been found on two occasions. These patients might be pre-diabetics and must be treated as diabetics. The most important factor in fetal death is maternal acidosis; this was found in 19 of the 51 cases. Pregnancy in a diabetic should be terminated at about the 35th week. Toxaemia, hydramnios and acidosis require immediate termination of the pregnancy at this time. Caesarean section has many advantages as the method of delivery in these cases, but sometimes the baby may die of hyaline membrane disease. Vaginal delivery after medical induction may be confidently expected if the condition of the cervix is favourable, but these babies are notoriously overweight and a traumatic delivery is to be avoided if possible. The pregnant diabetic should be hospitalized after the 32nd week and carefully watched for development of any complications.

In a series of 668 "elderly" (over 35 years of age) primiparas studied by Dr. R. T. Weaver of Hamilton, there were no maternal deaths, but the incidence of complications was much greater than among young primiparas. There were four times as many cases of toxæmia, and the prematurity rate was much more than double that of the young primipara group. The stillbirth rate was twice as high and the neonatal death rate was three times as great. Caesarean section among the "elderly" primiparas was nine times as frequent, and four times as many were delivered by mid-forceps. Dr. Weaver stated, and his figures support the claim, that 36 is "rather old" for an athletic feat such as labour. The "elderly" primipara requires extra prenatal care with much understanding and patience. Because this group is prone to difficult delivery, assessment during labour must be exact and earlier Caesarean section is indicated.

SECTION OF PÆDIATRICS

At the session on June 19, the rarity of diabetes mellitus in infancy was stressed by Dr. Barbara Robinson of Fredericton. The blood sugar is relatively high but there is often little ketosis. The onset of diabetes is often associated with infection which possibly is a trigger mechanism rather than a cause. There is a family history of diabetes in 60% of these cases, and a simple recessive type of transmission. Diagnosis is based on the following findings: polyuria, wasting, ketonuria, glycosuria and hyperglycæmia, persisting after an infection.

A case was presented of a five-month-old infant who was admitted to the hospital for paracentesis of ear drums after an upper respiratory tract infection. After ether anaesthesia the respirations were noted to be deep; the abdomen was distended and the infant comatose. Blood sugar was 520 mg. % and urine sugar 4 plus. Treatment was with intravenous normal saline and crystalline insulin 10 units every two hours until



Dave Thomas, Halifax

Guest speakers and a Montreal doctor (left to right): Dr. D. Rutstein, Boston, Mass.; Dr. M. B. Dockerty, Rochester, Minn.; Dr. Aubrey Leatham, London, Eng.; and Dr. F. Grégoire, Montreal.

urine became negative for sugar. Only minute amounts of insulin were needed to maintain a normal blood sugar. Ease of control in the early years was felt to be due to a relative insufficiency of insulin rather than a true lack.

These patients do not have nocturnal glycosuria until the second or third year of life, so that an intermediate type of insulin is more useful than protamine insulin. The survival rate is less than 50%. After the age of 20 there are often serious degenerative conditions.

Four causes of preventable mental deficiencies were discussed by Dr. L. E. LeBlanc—meningitis, neonatal icterus, cranial stenosis and an inborn error of metabolism (phenylketonuria).

Meningitis.—Inadequate laboratory facilities, improper selection of drug, inadequate amount of drug and delay in bringing the child to the doctor all lead to mental deficiency, blindness and deafness. The use of drugs in undiagnosed fever is also a factor in producing these crippling results.

Neonatal icterus.—Early exchange transfusions should be done in all cases with high serum bilirubin. All maternity units should have facilities for the micro method for determination of serum bilirubin.

Cranial stenosis.—This anomaly is rare. Gratifying results are obtained when corrective surgery is used.

Inborn error of metabolism.—Phenylpyruvic oligophrenia is a recessively inherited enzyme deficiency. There is failure to hydroxylate phenylalanine to tyrosine, with appearance of phenylpyruvic acid in the urine. Symptoms are mental deficiency, abnormal behaviour and seizures. For good results, treatment must be started as early as six weeks to three months of age. A low phenylalanine diet is achieved by the use of ketonil—a hydrolysate of casein with phenylalanine removed. A simple urine test demonstrates the presence of phenylpyruvic acid and is suggested for use as a routine test on the urine of all infants six weeks to three months old. The urine is acidified with 1% sulfuric acid and a few drops of 10% ferric chloride are added. A characteristic blue-green or greyish colour appears.

The production of immunity to tuberculosis by a fraction derived from killed tubercle bacilli was outlined by Dr. René J. Dubos of New York; this was a progress report of research done in the past five

years. The goal is to separate from the tubercle bacillus a substance capable of producing immunity but not capable of producing allergy to the tubercle bacillus. This purpose has not been fully achieved yet. With one method of extraction of a bacillary suspension, a toxic substance can be removed which interferes with immunity and makes the animal much more susceptible to experimental inoculation of the bacilli. From the bacillary residual two fractions can be obtained which give little allergy but more immunity.

In the discussion that followed it was suggested that the immunity thus obtained may be fairly long lasting. This immunity did not change the effect of the initial onset of disease but caused an accelerated appearance of the inflammatory change which would stop infection.

According to Dr. D. R. Murphy of Montreal, two fundamental techniques that make open heart surgery in children possible are: (1) Hypothermia, which reduces body metabolism so much that the venous return to the heart can be occluded for 10-12 minutes. This time limit becomes impractical in cases of more than very simple defect. Hypothermia has been used in intra-arterial defects and pulmonary stenosis, and is produced by cooling mattress or immersion ice bath. (2) Artificial heart-lung machines, which allow the circulation to bypass the heart for about 20 minutes. The incoming heparinized blood supply is brought into the machine from the venæ cavæ and thence to a pump which pushes the blood into an oxygenator, from which it is pumped back into the femoral artery. Protamine is used postoperatively to prevent hæmorrhage. Potassium citrate is injected into the aorta to produce cardiac arrest in diastole which facilitates repair of the heart. A multi-channel recording machine registers the blood pressure and takes an electrocardiogram and an electroencephalogram. All blood loss is measured and replacement kept up. The optimum age for surgery is three to eight years. It is difficult to use the pump oxygenator on children under two years, although it has occasionally been used on children weighing as little as 9 lb.

SECTION OF GASTROENTEROLOGY

The Section of Gastroenterology met on June 18 under the chairmanship of Dr. R. D. McKenna. The session was opened by Dr. K. E. Hodge, radiologist-in-chief at Sunnybrook Hospital, Toronto, who spoke on "Concepts of Small Bowel Radiology". In diffuse disease of the small bowel, the importance of preventing flocculation of the barium suspension was emphasized, and the use of colloidal barium was advised. Dr. Hodge felt that, in the future, motion pictures of the bowel would be useful in clarifying physiological and pathological changes.

Dr. R. A. Polson, assistant physician at the Winnipeg General Hospital, reviewed his experience with 44 cases of pancreatitis. Of the 37 acute cases, biliary tract disease was the predisposing factor in 27 and chronic alcoholism in seven. The mortality rate was much higher in the latter group. Diabetes mellitus occurred in five of seven cases of chronic pancreatitis with calcification.

Ulcerative colitis was the topic of a panel discussion with Dr. R. D. McKenna of Montreal as chairman. The participants included Dr. P. O'Sullivan,

Sunnybrook Hospital, Toronto; Dr. C. M. Ballem, assistant physician, Royal Victoria Hospital, Montreal; Dr. W. S. Anderson, assistant professor of surgery, University of Alberta, Edmonton; Dr. R. H. Thorlakson, section of surgery, Winnipeg Clinic; and Dr. R. O. Jones, professor of psychiatry, Dalhousie University, Halifax. After a brief introduction by Dr. McKenna on the general characteristics of ulcerative colitis, Dr. Ballem outlined the modern concepts of etiology and pathophysiology. Dr. Jones discussed the role of emotional factors in etiology and outlined the personality types most susceptible to the disease. The marked variability in the clinical features was stressed by Dr. O'Sullivan. In his experience the mortality rate, although considerably improved in recent years, is still about 20%, most of the deaths occurring in acute fulminating cases. In Dr. Ballem's opinion, recent improvements in medical management have been due chiefly to increased emphasis on fluid, electrolyte and nutritional balance, as well as the use of corticosteroids. Dr. Anderson felt that surgery should usually be reserved for complications. The types of surgical procedures used and their indications were outlined by Dr. Thorlakson.

SECTION OF PREVENTIVE MEDICINE

The Section of Preventive Medicine met on June 19 under the chairmanship of Dr. J. A. Melanson, Fredericton. Dr. G. E. Maddison of Saint John presented a paper on tuberculosis in general practice. He discussed the factors leading to the marked fall in the tuberculosis death rate in recent years and stressed the fact that the incidence of newly reported cases alone reflects the true position of T.B. control. He re-emphasized the need for continued perseverance in case-finding programs.

In a paper entitled "Factors Affecting Intracellular Lipoid Deposition in Human Aortic Cells in Tissue Culture", Dr. D. D. Rutstein, professor of preventive medicine, Harvard University, presented a promising experimental technique for further study of the etiology of atheroma. It was found that deposits of cholesterol in increasing concentrations would form in the primitive cell that grows out of the human aortic cell tissue culture until cellular death occurred. If the tissue was returned to the parent culture media before death ensued, the deposition of cholesterol was shown to be reversible. Further experimental work demonstrated that the deposition of cholesterol could be blocked by the addition of unsaturated fatty acid, but not by saturated fatty acid.

The epidemiology of an outbreak of staphylococcal food poisoning was outlined in a paper by Dr. R. D. Landry of Moncton, presented in his absence by Dr. Ian A. MacLennan, associate director of laboratories, New Brunswick Department of Health. The source was traced to the cream-pie division of a local bakery. On phage typing, the strains of staphylococci isolated from six nasal carriers among the personnel were found to differ from the causative pathogen. The source of the staphylococcus responsible for the outbreak remains undetermined.

Dr. R. J. Wilson, Toronto, presented a paper on progress in the prevention of virus infections in man. There had been a marked decrease in the incidence

of poliomyelitis in populations immunized with three consecutive doses of Salk vaccine. He reviewed the various enteric and respiratory viruses recently isolated, and forecast the production of measles vaccine in the near future.

In the absence of the author, Dr. Leonard Miller of St. John's, Dr. C. U. Henderson, secretary of the Newfoundland Division, presented a paper on the Children's Health Service in Newfoundland, describing the existing program of hospital and medical services and tracing its development since 1935. The steps in the negotiations of the Provincial Medical Society with the Newfoundland government in establishing the present system were reviewed. It was felt that they might serve as a model for discussions between the profession and government in other areas.

SECTION OF SALARIED PHYSICIANS

The Section of Salaried Physicians met on June 18 under the chairmanship of Dr. G. E. Fryer. Four papers were presented.

"The Function of the Physician in Industry" was outlined by Dr. D. C. Bews, Montreal. He discussed the role of the industrial health service and its relationship to other medical services and the concept of the industrial physician's position in the continuing care of illness. The need for the co-operation of attending private physicians in reducing time loss following industrial accident was noted. Dr. Joseph Willard, Ottawa, presented a paper on "The Effect of Socio-economic Trends on Medical Practice". The basic trend was the shift from a predominantly agricultural to a highly industrialized economy with urbanization of the population. This has led to the concentration of physicians in the city and to increasing specialization in medical practice. Expansion of prepaid medical services is due in large measure to the rise of large corporations and unions, medical care becoming incorporated as a fringe benefit in labour-management wage bargaining.

In "The Salaried Doctor's Contribution to Hospital Practice" Dr. L. O. Bradley, Winnipeg, discussed the factors that influence the physician to enter the field of medical administration and his role both as physician and administrator. He stressed the fact that formal training to meet specialist qualifications, as in other branches of medicine, will become a necessity as governmental control moves further into the field of hospital management. The role of the medical administrator in government service was presented by Dr. J. S. Robertson, Halifax. He described the medical administrator as an agent of liaison between governmental departments and the medical profession.

At the business meeting, the following slate of officers was selected: chairman, Dr. R. G. Ratz; past chairman, Dr. D. G. McKerracher; alternate chairman, Dr. G. E. Fryer; and secretary, Dr. R. M. Lane.

ARMED FORCES MEDICAL SECTION

The Armed Forces Medical Section met on June 20 with Dr. B. K. Coady of Halifax as chairman. Colonel J. E. H. Miller discussed army medical problems in

the Maritimes, from the viewpoint not only of the regular forces but also of the reserve forces. The strength of the R.C.A.M.C. in the Maritimes is 100 officers and 250 N.C.O.s and men. The shortage of personnel was a difficult problem. Among the major causes restricting enlistment in the militia was the lack of interest in supporting the reserve army and in civil defence. Other contributing factors were the necessity of writing examinations for promotion, and active duty in national emergencies. Colonel Miller pointed out the advantages of participating in the militia and of the dual training for the regular army and for civil defence.

Major D. H. B. Bevan-Jones discussed psychiatric problems in recruits. As many as 3.8% of recruits of the eastern command are downgraded within six months of enlistment. Psychiatric conditions contribute a high rate to this loss in manpower. Eighty-three per cent of these cases are of psychoneurosis and 17% are of mental deficiency. The speaker stressed the need for standard nomenclature in describing psychic illness. Enuresis is a common early finding, and Major Bevan-Jones recommends careful psychological examination of these recruits before induction. Once in the army, the psychoneurotic should be treated and not necessarily downgraded or discharged. Great difficulties are encountered in applying the Wechsler-Bellevue test to recruits from isolated areas. Faulty adjustment in civilian life does not necessarily preclude satisfactory service in the forces. Among the causes of psychic illness in military life are familial dependence and the impersonality of the services. The importance of full-time army psychiatrists was pointed out as the logical conclusion of this paper.

In a paper on the problem of man in the age of sonic and supersonic flight, Surgeon Lieutenant Commander H. D. Oliver stated that the cause of blackout was radial acceleration with pooling of blood and diminished venous return. Radial acceleration has worse effects when the force is at right angles to the direction of flight and acts usually in turning the aircraft. The speaker discussed protection from gravity in the range up to 10 or 12 G. The initial methods were to keep the pilot in the prone or supine position. As time passes, the problems of the man in the machine increase and at present these problems are formidable. The vertical acceleration encountered in ejection seats and in space travel is being studied intensively. Forces greater than 18 G are sufficient to fracture the vertebral column. The use of torso harness for ejection was presented, and the dangers of rapid deceleration from levels of 38 G. for 0.01 sec. at ejection were discussed.

Air evacuation of the sick patient was discussed by Flight Lieutenant P. L. Landrigan. In this circumstance epileptics are more prone to seizures. Diabetics must carry needles, syringe, sugar and insulin. Colostomy patients are apt to have increased flatus and should carry extra pads. The patient with a pneumothorax should not travel by plane in the first ten days, but may do so thereafter if equipment is available for tapping the chest as the pleural air expands. Patients who have suffered cardiac infarcts in the previous six weeks are poor travellers, as are those with upper respiratory tract infections. Acute traumatic cases may not do well in areas of decreased oxygen tension; supplemental oxygen should be administered to these patients. Search and rescue service is available in cases

where normal air-service cannot handle emergency problems.

Surgeon Commander R. H. Roberts noted an increase in peptic ulceration in naval personnel. He stated that most cases were controlled by standard medical treatment. Special aggravating factors in service life include intemperance in drinking, maladjustment to service life, and family separation through service at sea. The patient is kept ashore three months on special diets. Sea duty is a reasonable test of cure. Patients with one or two relapses probably should be discharged. Gastrectomy is rarely used, and only (1) in older skilled men with a minimum of five years' service; (2) after adequate medical trial; (3) after two or more severe hæmorrhages; (4) in cases of pyloric obstruction; and (5) when the patient is well motivated towards the service. It follows that more attention should be paid to a history of dyspepsia in recruits; those developing ulcers during induction should be regarded with suspicion; those in whom an ulcer appears later in the course of training should be treated in hospital, and rarely should the patient go back to service in less than four months; maladjusted patients and psychopaths should be discharged. Finally, those with recurrent or chronic ulcer should be reassessed and discharged if necessary.

ROUND TABLE CONFERENCES

CURRENT OBSTETRICAL PROBLEMS

With Dr. H. B. Atlee as moderator, the members of the Department of Obstetrics and Gynæcology of Dalhousie University met as a panel to discuss some current obstetrical problems.

Dr. W. G. Colwell introduced the subject of toxæmia of pregnancy. Dr. Carl Tupper spoke on the Rh factor and advised induction of labour at the 37th week for those cases in which the antibody titre was 1 in 64 or greater. Dr. Irwin Perlin reviewed the subject of postmaturity and gave figures from his survey of 12,000 deliveries at Grace Hospital. He concluded that postmaturity as such constituted very little in the way of a threat to the baby.

Dr. M. G. Tompkins, Jr., outlined the danger of various tumours complicating pregnancy and suggested lines of treatment. Dr. J. McD. Corston speaking on heart disease and pregnancy emphasized the importance of prenatal care. With the best of attention there is still a 3% maternal death rate in pregnant cardiac patients. Dr. K. M. Grant then directed specific questions to members of the panel in order to initiate a broader discussion on important points that had arisen during the presentations.

RECENT ADVANCES IN ANÆSTHESIA

A panel of anæsthetists, with Dr. G. V. Parsons as chairman, discussed all aspects of anæsthesia in a brief survey of the recent advances. Dr. E. R. Davis reviewed the advances in inhalation anæsthesia from the viewpoint both of technique and of new drugs. He stressed the great advances in the use of controlled

respiration. Dr. W. A. Oatway reviewed the history of relaxants and noted their first use by Sir Walter Raleigh. Introduction of these drugs has resulted in improved relaxation, reduction in laryngeal spasm and shortening of the postoperative period of apnoea.

Dr. A. F. Pasquet reviewed the use of ancillary drugs. He felt that tranquillizers had not proved as valuable as had been originally hoped. He favours the use of barbiturate the night before operation and morphine and scopolamine preoperatively. Tranquillizers should be used only for specific purposes. He discussed the value of hypothermia in lowering metabolism in cases of severe shock. Dr. L. E. Prowse presented an interesting paper on spinal anæsthesia. He stated that spinal anæsthesia was not as popular as it used to be, owing to lack of practice in administration. Dr. Prowse considers it a technique for the skilled individual. He himself has had a long experience with this type of anæsthesia and feels that it is extremely satisfactory. He also discussed nerve blocks, particularly of the sympathetic system.

In the general discussion, a wide interest in Fluothane, particularly when combined with ether, was demonstrated. All the panel participants had used the agent and found it worth recommending.

PSYCHIATRY IN GENERAL PRACTICE

A group of four psychiatrists under the chairmanship of Dr. R. A. Gregory discussed the problems presented by psychiatry in general practice. The proper completion of forms for the admission of patients to mental hospitals was the first topic discussed. It was pointed out that these forms are legal documents and consequently have to be filled out properly because otherwise they may render the hospital and the doctor committing the patient liable to lawsuit. In discussing the advantages of and indications for commitment, it was stated that hospital treatment is preferable to home care for patients who present behavioural problems and show suicidal tendencies. It must also be remembered that isolating a patient from his family may be a step of primary importance for successful treatment. Conflicting figures were offered concerning the age range of first admissions. These figures varied according to the type of practice; in one case there was a predominance of arteriosclerotic and senile patients, whereas in a community psychiatric clinic or a mental health clinic the number of children seen lower the average age considerably.

The problem of handling chronic neurotics in general practice was compared to that presented by the chronic tuberculous patient or by diabetics. The point is not to aim for a cure, but simply to assist them to live a fuller life in spite of their disability. The use of tranquillizers such as meprobamate was recommended as a way to enhance the relationship between the patient and the physician. The audience was again reminded of the toxic psychosis which phenobarbitone may produce in elderly patients. Meprobamate or any of the phenothiazine group of drugs is preferred in these cases. In persuading patients who are reluctant to see a psychiatrist, all members of the panel agreed that honesty is still the best policy and that the patient should always be told the truth. Intervention of the

police in such cases may be deplorable and yet necessary; in any event it is less harmful than taking the patient by guile. The ill-effects of electrotherapy were divided into physical effects, such as fractures, and mental effects, such as loss of memory and mental confusion. There was general agreement that E.C.T. should not be prescribed indiscriminately. The treatment of acutely intoxicated alcoholic patients was reviewed. The audience was reminded of the diagnostic criteria in recognizing an early mild depression.

RECENT ADVANCES IN DERMATOLOGICAL THERAPY

A panel on dermatological therapy with Dr. J. G. MacLean of Saint John, N.B., as chairman, opened the last day of the scientific program. Members included Dr. F. Kalz, Montreal; Dr. A. R. Birt, Winnipeg; Dr. W. A. Maddin, Vancouver; and Dr. Jean Grandbois, Quebec. The panel answered questions and touched on therapy of many of the commoner dermatological problems encountered in general practice.

Several questions relating to the role of corticosteroids in dermatology were discussed. Dr. Kalz believed that, as a general rule, these agents should be reserved for acute, self-limiting conditions, and should be used with reluctance in chronic disease because of the difficulty in discontinuing therapy. Dr. Maddin mentioned their use in acne vulgaris and generalized psoriasis. Newer drugs, such as triamcinolone, seemed to be favoured.

The incidence of ringworm infection contracted from cattle would appear to be on the increase. Dr. Grandbois finds local potassium permanganate dressings and superficial radiotherapy to be effective. Dr. Birt stressed the self-limiting character of the disease and warned against over-enthusiastic treatment, which may increase scar formation.

Other topics discussed included verruca vulgaris, diaper rash, atopic dermatitis and ichthyosis. The straightforward, practical approach of the various panel members was appreciated by the large audience.

EAR, NOSE AND THROAT PROBLEMS IN CHILDREN

The discussion was opened by Dr. R. S. Grant, who described the treatment of laryngotracheobronchitis. Immediate hospital care was necessary, with two principal objectives: controlling infection by the use of crystalline penicillin and chloramphenicol, and controlling hypoxia by cold moist oxygen. Heavy sedation by rectal thiopentone was used for 48 to 72 hours. Dr. J. B. Whaley gave his indications for tracheotomy; he felt that removal of the tube should be attempted in 5-7 days, especially in infants. Dr. A. Shane noted that the use of Alevaire has been entirely discontinued. Dr. Grant felt that trypsin has a definite value in keeping secretions moist; it is used along with tracheotomy. Dr. Whaley discussed the use of plastic tracheotomy tubes, which are less irritating in chronic cases; Dr. W. J. McNally thought that they are easily damaged and do not stand up to prolonged use.

Indications for the removal of tonsils and adenoids in a child were next discussed. Dr. Shane relied a great deal on the patient's history and on the advice of the referring physician who had observed the child during the infections. Repeated ear infections especially indicated removal of adenoids. Hypertrophy of adenoid tissue is best diagnosed by radiographs of this area, as suggested by Dr. Whaley. Tonsils and adenoids were not removed from patients under three years of age unless there was a specific history. Dr. Shane discussed the latent effects of ear infections if no surgical drainage was done and felt that if there were signs of eustachian tube blockage, the tubes should be inflated. One must also make sure that hearing is back to normal.

In an adenoidectomy Dr. Shane considered that the most successful means of removing all the adenoid tissue was the use first of a cage curette and then an uncaged curette. Bleeding and clotting times were considered of little value and their determination has been discontinued as a routine in some places. Antibiotics are not always used.

The problem of the deaf child was then considered. Dr. Whaley discussed the use of hearing aids in infants as young as one year to accustom them to sounds. A correspondence course through the Tracey School, California, has been very helpful to parents in the training of children of preschool age. Education for these children should start at three years of age, though Dr. Whaley pointed out that many schools for the deaf will not admit children under seven.

MEDICAL SOCIETIES

CANADIAN ASSOCIATION OF PATHOLOGISTS

The Canadian Association of Pathologists held their Tenth Annual Meeting in conjunction with the Atlantic Provinces Pathological Society on June 21 and 22 at Camp Hill Hospital, Halifax, N.S.

A number of excellent scientific papers together with a seminar on biopsies were presented. The scientific papers included three by guest speakers. Captain W. M. Silliphant, U.S. Navy, Director of the Armed Forces Institute of Pathology, Washington, D.C., spoke on the organization and functions of the Institute. Professor H. E. MacMahon, Tufts Medical School, Boston, delivered a paper on vasculitis in man, and Dr. Claude Taylor of Birmingham, England, discussed carcinoma in situ in Great Britain.

The scientific meeting was followed by the annual business meeting. The federal Hospitalization Insurance Plan has created many problems for pathologists. It is of fundamental importance that the medical profession as a whole realize that this plan includes diagnostic services as part of the hospitalization plan, initially to cover in-patients and eventually out-patients as well. These services must be recognized as being medical services and not hospital services. Much of the business meeting dealt with this problem and the problem of the relationship of pathologists to hospitals under the new plan. Unless satisfactory solutions to these

problems can be worked out, the standard of laboratory services will deteriorate and this will be reflected by lowering of the standards of all medical practice. Since matters of health in relation to government agencies are provincial responsibilities, and because the situation differs somewhat in each province, an attempt is being made to devise plans for providing laboratory diagnostic services in each province to fit the local need. All these plans embrace the fundamental principle that pathology is the practice of medicine and as such is entitled to a fee-for-service type of remuneration.

The rapid expansion of laboratory services across Canada has resulted in a shortage of professional and technical personnel. To meet this the Canadian Association of Pathologists has set up special committees which are concerned not only with the supply of personnel but with the maintenance of standards of training. A Joint Committee of the Canadian Association of Pathologists and the Canadian Society of Laboratory Technologists is studying the problem of medical technologists and a special committee of the Canadian Association of Pathologists is studying the ways and means of maintaining and improving the standards of laboratory services in the face of rapidly increased demands.

The following officers were elected for the coming year: president, Dr. M. O. Klotz; eastern vice-president, Dr. Harold Pritzker; western vice-president, Dr. John Macgregor; secretary-treasurer, Dr. D. W. Penner.

PHARMACOLOGICAL SOCIETY OF CANADA

The Pharmacological Society of Canada held its annual business meetings on Monday, June 9 and Tuesday, June 10 in association with the annual meeting of the Canadian Federation of Biological Societies. At the business meeting Dr. J. K. W. Ferguson of Toronto was installed as President and it was announced that the 1959 meeting place would probably be Toronto. The *Canadian Journal of Biochemistry and Physiology* was recognized as the official journal of the Society.

The business meeting on Tuesday was preceded by a symposium on certain basic mechanisms of drug action. Dr. K. H. Beyer described the renotropic characters of chlorothiazide, comparing its action with those of acetazolamide and meralluride. Thus chlorothiazide has an action on Cl, Na and K excretion similar to meralluride, although it is a carbonic anhydrase inhibitor. Moreover, its action is not a mirror image of hydrocortisone action. Dr. B. Belleau discussed working hypotheses in relation to adrenergic receptors, with special reference to dibenamine. Dr. Szerb spoke on the peripheral autonomic nervous system effects of morphine, noting that it blocked acetylcholine release at the periphery, and might possibly do this in the central nervous system also, though this was not altogether evident. In any case, study of narcotic action at the periphery would help an understanding of the effect on the central nervous system.

Dr. C. Parker gave an account of the relation of chemical structure and biological action in the central nervous system. Two unsolved problems, he said, were

the use of the terms "sedative" and "stimulant" and the reasons for the different modes of action of various barbiturates. Out of the 1200 barbiturates synthesized 200 had been studied pharmacologically; some were sedatives, others with similar chemical structure were convulsants, and a third group combined relaxant effect with bouts of activity. It was impossible to predict from structure the degree or type of activity of a drug on the central nervous system.

LETTER TO THE EDITOR

INTRAVENOUS CHLORPROMAZINE

To the Editor:

Dr. McNair's paper (*Canad. M. A. J.*, 78: 785, 1958) on repeated administration of chlorpromazine by intravenous drip in psychotic patients states that its virtues are: (1) a rapid result, the effects being manifest on the first day; and (2) the relatively low daily dosage of medication used because it is administered parenterally.

If an adequate amount of chlorpromazine is given orally when the patient is first seen, immediate control can be established and parenteral administration is unnecessary. It requires considerable experience to give adequate dosage and it must be appreciated that starting a disturbed patient on 25-50 mg. chlorpromazine t.i.d. is to treat him with what is practically homeopathic doses of the drug. There should be no hesitation in starting such a patient immediately on 500 or 800 mg. daily and rapidly raising the dose until control is established.

It must be realized that the tranquillizers are to be compared with insulin in that there is no maximum dosage. Just as the average diabetic needs 20-30 units of insulin daily but some who are insulin resistant may receive many hundreds of units, so is the dose of tranquillizers a very variable quantity. I have several patients on a disturbed service receiving over 5000 mg. chlorpromazine daily, while one patient's daily dosage was 10,000 mg. chlorpromazine for several months.

It is insufficiently realized by physicians that considerable emotional trauma attends the giving of any injection. Recently I took a class of student nurses, showed them a syringe and rubbed their arms with alcohol swabs. Although they knew that they were not going to get an injection, nevertheless the average pulse rate rose from 80 per minute to 120 per minute. A similar result was obtained on psychotic patients.

Psychotic patients sometimes ask for injections to calm them. To give an injection any time it is asked for is merely catering to the neurotic needs of the patient and leads to requests for a repetition of the treatment. The time when the patient first asks for the injection is the time to ask him why he needs it and what is troubling him. This question is usually greeted with an outpouring of the patient's troubles and it is the therapist's job to listen without interruption. This will be of true help to the patient, which the administration of an injection alone will not be.

As Dr. McNair points out, it is important to realize that while the tranquillizers are of great help in treat-

ing the mentally ill, they are not a substitute for the thousand cares and humane handling required by the psychotic patient.

M. G. JACOBY, M.B., B.S.

Central Islip State Hospital,
Central Islip, N.Y.,
May 29, 1958.

OBITUARIES

DR. ELLIOTT N. BALLANTYNE, 68, died at St. Joseph's Hospital, Hamilton, Ont., on June 7. He was born in Alexander, Man., and received his primary and secondary education in Smiths Falls and London, Ont. In 1910, he took his Bachelor of Arts degree from the University of Western Ontario, in 1917 he gained his medical degree, and in 1927 his Master of Science degree. From 1917 to 1919, he served with the Canadian Army Medical Corps. In 1929, Dr. Ballantyne went to Hamilton to accept the position of director of laboratories. He was a regional pathologist for the department of the attorney-general of Ontario and a past president of the Ontario Association of Pathologists.

He is survived by his widow, a son and a daughter.

DR. MAXWELL FINEBURG, 57, died on March 8, at St. Louis, Mo., where he was a prominent surgeon. He was born in Montreal, and graduated in medicine from McGill University, doing postgraduate work at Bellevue Hospital, New York, and in Vienna. He began to practise in St. Louis 30 years ago, and was on the staff of the St. Louis Jewish Hospital. He represented the medical society on the board of the Blue Cross and was a director of the Medical-Dental Service Bureau, both of which he helped to organize locally.

Dr. Fineburg is survived by his widow and three sons.

DR. JOHN ARTHUR McCUE, 45, died at Smiths Falls, Ont., on May 26. He graduated from Queen's University in 1936, and did postgraduate work at Kingston (Ont.) General Hospital, Fairview Park Hospital, Cleveland, Ohio, and New York City Hospital. He then established a practice in Smiths Falls in 1938. Dr. McCue served overseas during the Second World War with the 1st Field Ambulance of the Royal Canadian Army Medical Corps. He was president of the Smiths Falls and Lanark County Medical Association, and of the Conservative Association, being elected eight months ago as Progressive Conservative member for Lanark to the Ontario Legislature. For two years he was chairman of the Ontario Medical Association's general practice section.

Dr. McCue is survived by his widow, two sons and two daughters.

DR. GEORGE W. McINTOSH, 76, died on June 1, after a short illness. He was born in Brussels, Ont., and went to Winnipeg, Man., with his parents at an early age where he was educated. In 1906, he grad-

uated from the Manitoba Medical College and began to practise in the Elmwood area of Winnipeg.

Dr. McIntosh is survived by his widow.

DR. CHARLES W. SINCLAIR, 70, died at St. Thomas-Elgin General Hospital, St. Thomas, Ont., on May 26. He was born in Aylmer, Ont., and graduated from the University of Toronto Medical School in 1911. He then joined his father in practice in Aylmer until serving overseas during World War I. After the war, he returned to the practice in Aylmer and continued in this practice after his father's death in 1936.

Dr. Sinclair is survived by his widow, a daughter and two sons.

DR. JAMES WOLSLEY THOMSON, 74, died in Vancouver on May 5. He was born in Mattawa, Ont., and graduated in medicine from McGill University. He went to Vancouver in 1907, and interned at Vancouver General Hospital, working with Dr. E. A. McKechnie for several years before establishing his own general practice.

Dr. Thomson is survived by his widow and three daughters.

DL-METHIONINE IN URINARY INCONTINENCE

(Continued from page 123)

The mechanism of action of the methionine in such cases is not clear, and no attempt was made to clarify this problem in the present study. Bergman¹ has suggested that part of its action may be due to its tendency to favour nitrogen balance with reduced nitrogen excretion in the urine. Williamson² has shown that methionine is necessary in the healing of experimental wounds; it is possible that it plays a similar role in the healing of skin eruptions. Kass³ has recently reported that methionine is effective for the suppression of bacteriuria, for which there may be three separate mechanisms: (a) the acidifying effect of methionine on the urine; (b) the presence of normal urinary "inhibitors" of bacterial multiplication that are active at relatively low pH values; (c) excretion in the urine of an antibacterial substance presumed to be a metabolic product of methionine.

SUMMARY

DL-Methionine in a dosage of 0.2 gram, three times daily, reduced urinary odours and genital and perineal dermatitis in 10 mentally deteriorated elderly subjects, in three of whom frequency of wetting was markedly reduced.

DL-Methionine used in this study was supplied as Pedameth capsules by Winley-Morris Co., Montreal 29, Quebec.

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PROVINCIAL NEWS

BRITISH COLUMBIA

The annual summer school of the Vancouver Medical Association was held in Vancouver June 2-5. The meetings were held in Stanley Park Pavilion and clinics were given in the various hospitals. The weather was perfect, and Stanley Park was at its most beautiful.

The program was a particularly good one and our distinguished guests were most generous. There were programs of entertainment, as well as more serious matters. Dr. John W. Patterson, dean of the Medical School of the University of British Columbia, was guest speaker at the luncheon on Tuesday, and he spoke of the Medical School, its work and prospects. His report was definitely encouraging, but he warned that certain conditions must be fulfilled in order to make our Medical School one of the first order. Perhaps the most important of these desiderata was the matter of research, and he pointed out that this is one of the major functions of any medical school, and a most essential factor in its growth and its value.

In line with this is the announcement that appeared in the daily press concerning a notable contribution that Dr. Patterson himself was able to make in this matter of research. He was instrumental in securing a grant of \$21,735, made to the Medical School by the National Institute of Health of the U.S.A., and to be devoted to the study of ophthalmic cataract. This grant is the first instalment of a five-year grant arranged for by Dr. Patterson, which will ultimately amount to more than \$100,000.

Dr. Patterson was himself engaged in this research project before he came to B.C. from the United States to become dean of the Medical Faculty of the U.B.C.

One of the most worthy of all the centennial projects now under way in B.C. is that of the children of B.C.'s schools. They are subscribing funds to buy additional facilities for two hospitals devoted to children. These are the Queen Alexandra Solarium in Victoria and the Vancouver Preventorium. The latter is being much enlarged and reorganized, to deal with children's care in matters other than tuberculosis, for which it was originally designed.

These children have already raised \$16,000; this represents the amount turned in by 500 of the 1400 schools concerned in the project. Private as well as public schools are supporting the plan, which is under the control of a trustee board composed of representatives from the U.B.C., the students themselves, and other bodies concerned.

For the past 20 years or so, the professions in Vancouver and other cities in the province have been subject to a yearly tax imposed by the various municipal bodies, under the name of "professional" tax; it was originally a "business" tax, or a licence to carry on business. Since we all had licences anyway, this could not be made to stick, and the name was changed. Since no service whatever was rendered in return for this tax, it was regarded by all professional men as unfair and inequitable, to put it mildly; but we were sitting ducks, and it was easier to get us. Lawyers, dentists, and engineers are among those who have suffered this tax all these years. Just recently, the courts

—in this case, we think, the B.C. Court of Appeal—have decided that this tax is not justifiable, and have ordered its discontinuance.

The Government of B.C., through its Minister of Health and Welfare, the Hon. Eric Martin, has vigorously disclaimed any intention of socializing medicine in B.C., or attempting to force the medical profession into any socialized scheme. Mr. Martin, in a speech on the subject, was most emphatic in denying any rumours to this effect.

The 58th Annual Convention of the B.C. Medical Association, now the B.C. Division of the Canadian Medical Association, will be held in Kelowna in October; and plans are now being made for an exceptional program, both scientific and social. Drs. Paul Found and David Clarke, of Kelowna, are in charge of the program.

The B.C. Division of the Canadian Medical Association is a very active body these days—in common, we expect, with all its sister divisions throughout Canada. The new Hospital Insurance and Diagnostic Services Act of 1957 alone would justify a great deal of consideration and discussion. In B.C. there has lately been a dispute with the government over Social Assistance Medical Services, which have increased steadily year by year in the amount of work demanded of the profession, while the percentage of remuneration available has steadily decreased, till the profession is paying half the cost of it, by reason of the fact that the money available through contribution by the government does not pay for more than 50% of the legitimate charges of those who render the service.

There have been meetings between the B.C.M.A. and the government, and while the response of the latter has been very far from satisfactory, some concessions have been gained, and it is hoped that at a later date, more equitable terms will be secured.

At a meeting of the General Assembly of the Division reports on these matters were given. It has been decided that among the first things that have to be done is a survey of our public relations as well as our interprofessional relations. Steps are being taken to institute this survey. It is felt that there is a dearth of exact information available to us in these matters, and also that the public at large does not understand our problems as a profession, or our point of view. This survey should provide these facts, which would be of value to both sides.

J. H. MACDERMOT

ALBERTA

In Edmonton, Dr. Hugh Paul, honorary consultant in epidemiology to the Birmingham Regional Hospital Board, Birmingham, England, addressed the Medical Officers of Health of Alberta on current trends in public health, adding some thoughts on epidemiology. Dr. Paul had attended the Canadian Public Health Association meeting in Vancouver.

Since 1947 the medical care of recipients of widows' pension and pensions for the blind, and old age pensioners who pass a means test, has been paid for out

of a fund administered by the College of Physicians and Surgeons of Alberta. This fund is contributed by the provincial government on the basis of capitation. Unfortunately, the original figure agreed on was the average yearly cost of medical care to the individual without taking cognizance of the extra care required by this age group. As a result, though there have been several upward revisions of the grant, payment to the physician has always been just over 50%. Because of the new fee schedule, introduced in January, the initial payments will be 40% of the assessed value. This information is contained in a circular letter from the College, which also advises that accounts submitted between three and six months after the service is rendered will be discounted 25%, with the penalty increasing by 25% each quarter, so that accounts not submitted until after 12 months have elapsed will be discounted 100%. Oddly enough, it is urged that those submitting accounts be sure that postage is adequate.

The first equipment in Alberta for artificial fluoridation of water went into action last month in Fairview, a town in the Peace River area. In 1957 the Provincial Legislature passed enabling legislation which provides for a local vote on this issue. Voting has been carried out in many communities, preceded in most instances by vigorous campaigns pro and con. In Calgary, where the medical officer of health was opposed to adulteration of the water in this manner, only 45% voted for fluoridation. In Edmonton, the procedure was endorsed by the city's health officer and the vote was 51% in favour; however, a two-thirds majority is required and it is not permitted to vote on the issue for another two years. Only three communities have voted in favour of fluoridation of the public water supply: Fairview, Grande Prairie and Red Deer.

W. B. PARSONS

SASKATCHEWAN

At the May dinner meeting of the Regina and District Medical Society, held at the Hotel Saskatchewan in conjunction with the Third Annual Cancer Symposia of the Allan Blair Memorial Clinic, the guest speaker was Dr. John J. Wild of Minneapolis. He spoke on "Possibilities of Early Cancer Diagnosis by Means of Ultrasound".

The first and second years of a new four-year degree course in physical education will be offered at the University of Saskatchewan in September.

Dr. L. Cosin, Clinical Director of the Cowley Road Hospital Geriatric Unit in Oxford, England, visited Saskatoon during June. While here he spoke on "New Methods of Care for Aged Patients and Geriatric Rehabilitation".

G. W. PEACOCK

ONTARIO

The Canadian Arthritis and Rheumatism Society has announced a program of grants and fellowships totaling almost \$155,000. Seven of the 32 grants and fellowships go to University of Toronto research men. The Toronto grantees are Dr. M. A. Ogryzlo, Dr. A. G. Gornall, Dr. H. Z. Movat, Dr. E. H. Simmons and

Dr. William Anderson. Dr. H. A. Smythe has been awarded a fellowship.

Dr. Ian M. Kerr, former director of the Niagara County Mental Health Clinic, Niagara Falls, New York, and Oscar Karabanow, previously on the staff of the Saskatchewan Hospital, Weyburn, Sask., have accepted appointments as attending psychiatrists on the full-time staff of the Institute of Psychotherapy, Kingston, Ontario.

NEW BRUNSWICK

At the annual meeting of the Saint John Medical Society early in May, Dr. F. D. Wanamaker was elected president. Other officers are: vice-president, Dr. H. A. Bird; secretary, Dr. W. D. Miller, treasurer, Dr. Gordon Gaulton; executive, Dr. T. E. Grant, Dr. R. G. Macdonald, Dr. F. G. Knoll and Dr. F. L. Whitehead.

The Hon. J. C. McInerney, M.D., N.B. Minister of Health, was the guest speaker at the annual spring dinner meeting of the Saint John Medical Society, held at the Riverside Golf Club. Dr. F. D. Wanamaker was chairman and a very large turnout of members was present to hear a presentation of the proposed plan to implement hospital insurance in New Brunswick under federal and provincial government auspices. The Minister of Health was optimistic that the plan proposed would be acceptable. Without optimism, no great thing can be established, and it was evident that aid would still be required from municipal, religious and philanthropic sources to make the plan function. During discussion, complimentary references were made to a series of articles on the hospital insurance theme appearing in the *Canadian Medical Association Journal* of May 15, 1958.

Dr. Colin B. MacKay, President of the University of New Brunswick, announced recently that a gift of a quarter of a million dollars, spread over an eight-year period, from the Kellogg Foundation had been made available to the University to assist in establishing a School of Nursing. A beginning has been made to recruit a staff and in September 1959 it is hoped the first class will be enrolled. The proposed school will offer a four-year degree course in nursing. The staff of the school would be available as consultants to government and hospital departments to aid in the program of nursing education. Great credit is due to Miss Kathleen Russell, whose report on nursing education in New Brunswick focused attention on the need for such a school.

Dr. Lionel Guravich of the medical staff of the Lancaster D.V.A. Hospital has received a fellowship in the American College of Physicians.

Dr. J. R. Nugent presided at a special meeting of the medical staff of St. Joseph's Hospital at Saint John at which the heads of departments were elected: chief of medicine, Dr. H. M. Watts; chief of surgery, Dr. T. E. Grant; chief of obstetrics and gynaecology, Dr. Joseph Tanzman; chief of radiology, Dr. E. A. Petrie; chief of pathology, Dr. H. A. Bird.

(Continued on page 152)



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(Continued from page 150)

Dr. William Miles Jenkins of Gagetown, N.B., graduated from McGill University in 1908. On June 6, over one thousand people from Queen's County and other points gathered at Queenstown to honour him on the completion of 50 years of practice. Dr. Jenkins was presented a scroll expressing appreciation of his work, and a scholarship fund has been established in his name. Dr. Jenkins has had many interests besides his medical practice. He served in the N.B. Legislature, he was an outstanding horseman and he worked long to improve agriculture and fruit growing in New Brunswick.

St. Joseph's Hospital in Saint John was formally opened on June 14. This new building cost \$3,400,000 and provides a magnificent addition to hospital services in New Brunswick.

Air Commodore A. G. Corbet of Saint John and Ottawa has been reappointed as an honorary physician to Her Majesty the Queen.

Dr. Stephen Weyman, president of the Canadian Paediatric Society, welcomed a large number of Canadian members and also a considerable delegation of members of the New England Pediatric Association at St. Andrews, N.B., for their annual meeting. Dr. Weyman is the first president of this organization from the Atlantic Provinces.

At the annual meeting of Trans-Canada Medical Plans, held in Saint John, Dr. D. A. Thompson of Bathurst was elected chairman for 1958-59.

A. S. KIRKLAND

NEWFOUNDLAND

Newfoundland Medical Association

Corner Brook was host to the Newfoundland Medical Association this year for the first time. The convention was held on May 26 to 28. Pleasant surroundings, brisk business sessions, a scientific program of high calibre, and ample provision for relaxation combined to make it an unusually successful one.

Over 80 practitioners from all parts of the island were registered, including members of the United States Air Force from Stephenville and Greenland. A special railway car carried a contingent of about 20 from St. John's; they returned by air on May 29, looking somewhat the worse for a surfeit of Corner Brook hospitality.

The scientific program featured speakers from St. John's and Corner Brook and the following guests: Dr. N. C. Delarue, Department of Surgery, University of Toronto; Dr. Roy Forsey, Department of Medicine, McGill University; Dr. W. R. C. Tupper, Department of Obstetrics and Gynaecology, Dalhousie University; Dr. G. Gingras, Director of the Rehabilitation Institute of Montreal; Col. C. Caswell, R.C.A.M.C., and Col. D. N. Vivian, U.S.A.F., Stephenville. A wide variety of topics was covered, and Dr. Delarue made the headlines in the provincial press with his forthright implication of cigarette-smoking in cancer of the lung. An innovation this year was the selection of a broad

clinical subject for discussion at each of the daily lunches.

The following were elected to executive posts for the next year: president, Dr. J. B. Roberts; first vice-president, Dr. J. Heath; second vice-president, Dr. F. L. O'Dea; immediate past president, Dr. D. Cant; honorary treasurer, Dr. J. D. Baird; honorary secretary, Dr. C. U. Henderson; members of the Executive Council, Drs. T. G. Anderson, C. J. Joy, J. Williams, I. E. Rusted, W. D. Parsons, C. D. Kean, H. Twomey, D. Murphy, H. Drover, and J. H. King.

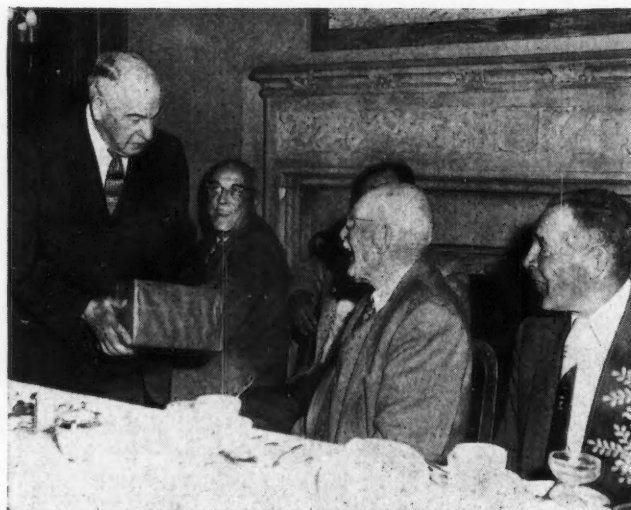
Dalhousie Graduation

Thirteen Newfoundlanders have graduated from Dalhousie University Medical School this year—a record number. Most of them are returning. The new physicians are: Drs. Robert W. Young, John M. Edgecombe, Douglas Butler, George M. Cobb, Michael J. Walsh, Thomas G. Ricketts, Edmund J. Quinlan, J. Alexander Lawrence and Robert K. Shapter of St. John's; Dr. Bodo Epstein of Bishop's Falls; Dr. Lester J. Wiseman of Gander; Dr. J. Bernard Hicks of Bonavista, and Dr. John L. Potts of Grand Falls.

Several of them will be assistant physicians at Cottage Hospitals: Dr. Wiseman at Channel, Dr. Ricketts at Bonne Bay, Dr. Hicks at Bonavista, Dr. Quinlan at St. Lawrence, and Dr. Epstein at Old Pelican. Dr. Potts will be practising at Dryden, Ontario. Dr. Lawrence will be in general practice with Dr. Delory at Annapolis Royal; N.S. Shapter will be with the R.C.A.M.C. at Goose Bay. Drs. Young and Cobb will be residents in internal medicine and in radiology at the St. John's General Hospital. Drs. Edgecombe and Walsh will be in St. John's, Dr. Edgecombe in association with Dr. H. D. Roberts, and Dr. Walsh taking over the practice of Dr. J. V. Ryan, who is leaving shortly to do postgraduate work in internal medicine.

ANGUS J. NEARY

PRINCE EDWARD ISLAND



The Guardian, Charlottetown

"Well done, Dr. MacDonald," says Dr. A. MacDonald (84) to Dr. Roddy MacDonald as he hands him a 100th birthday gift from his medical colleagues, at the meeting of the outgoing Executive Committee of the Canadian Medical Association in Charlottetown on June 13. Dr. Morley Young (left) and Mr. Colin MacDonald (right), son of Dr. Roddy, look on.

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*Weiss, S. & Weiss, J. — "An experimental and clinical
Study of a Synthetic Choleretic", The Review of
Gastroenterology, 19-10, p. 792-807, Oct. 52.

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*Rock, J.; Pincus, G., & Garcia, C. R.: *Science* 124:891 (Nov. 2) 1956.

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Books Received

Books are acknowledged as received, but in some cases reviews will also be made in later issues.

Operable Herzleiden (Operable Lesions of the Heart). J. Jacobi, Hamburg, and M. Loeweneck, Hamburg. 175 pp. Illust. Georg Thieme Verlag, Stuttgart; Intercontinental Medical Book Corporation, New York, 1958. \$11.20.

Atlas und Kurzgefasstes Lehrbuch der Phonokardiographie (Atlas and Concise Textbook of Phonocardiography). K. Holl-dack, Berlin, and D. Wolf, Heidelberg. 175 pp. Illust. Georg Thieme Verlag, Stuttgart; Intercontinental Medical Book Corporation, New York, 1958. \$11.80.

Der Rheumatismus (Rheumatism). K. Voit Mainz, and A. Gamp, Bad Kreuznach. 349 pp. Illust. Ferdinand Enke Verlag, Stuttgart, 1958. DM 47.50.

Self-Teaching Tests in Arithmetic for Nurses. R. W. Jesse, Wilkes-Barre, Pa. 133 pp. 5th ed. The C. V. Mosby Co., St. Louis, Mo., 1958. \$2.40.

The Extra Pharmacopœia. Martindale. Vol. I, published by the Council of The Pharmaceutical Society of Great Britain. 1695 pp. 24th ed. The Pharmaceutical Press, London, 1958. £3. 5s.

The Effects of Atomic Radiation on Oceanography and Fisheries. Report of the Committee on Effects of Atomic Radiation on Oceanography and Fisheries of the National Academy of Sciences, Study of the Biological Effects of Atomic Radiation. 137 pp. The National Academy of Sciences, National Research Council, Washington, D.C., 1957. \$2.00.

Neomycin: Its Nature and Practical Application. Edited by S. A. Waksman. 412 pp. Illust. The Williams & Wilkins Company, Baltimore; Burns & MacEachern, Toronto, 1958. \$5.00.

Psychiatric Research Reports 8. Research in Affects. A.R.A. Regional Conference, State University of New York. Upstate Medical Center, Syracuse, N.Y. April 5-6, 1957. Edited by Members of the Committee on Research, 1956-57. 186 pp. American Psychiatric Association, Washington, D.C., \$2.00.

Electron Microscopic Atlas of Normal and Leukemic Human Blood. F. N. Low and J. A. Freeman, Louisiana State University. 347 pp. Illust. McGraw-Hill Company of Canada Limited, Toronto, 1958. \$26.25.

A Laboratory Guide in Chemistry. J. H. Roe, George Washington University School of Medicine, Washington, D.C. 244 pp. 3rd ed. The C. V. Mosby Company, St. Louis, Mo., 1958. \$2.50.

The Medical Management of Cancer. H. D. Diamond, Cornell University, New York. 179 pp. Illust. Grune & Stratton, Inc., New York, 1958. \$6.75.

Perennially Yours, Probie. Jo Brown. Illust. Springer Publishing Company, Inc., New York, 1958. \$2.50.

The Practice of Infectious Diseases. L. Weinstein, Boston. 501 pp. McGraw-Hill Company of Canada Limited, Toronto, 1958. \$8.98.

Drugs of Choice 1958-59. Edited by Walter Modell. 931 pp. The C. V. Mosby Company, St. Louis, Mo., 1958. \$12.75.

Autonomic Dyspraxia: An Hypothesis of the Mechanism of Psychosis, Neurosis and Psychosomatic Disease. B. G. Haynes, University of Sydney, Australia. 122 pp. H. K. Lewis & Co. Ltd., London, 1958. 15s.

Heart Disease in Infancy and Childhood. J. D. Keith, Toronto, and others. 877 pp. Illust. The Macmillan Company, New York; Brett-Macmillan Ltd., Toronto, 1958. \$22.50.

The Chemistry and Chemotherapy of Tuberculosis. E. R. Long, University of Pennsylvania. 450 pp. 3rd ed. The Williams & Wilkins Company, Baltimore, M.D.; Burns & MacEachern, Toronto, 1958. \$12.00.

Ocular Allergy. F. H. Theodore and B. Schlossman, 420 pp. Illust. The Williams & Wilkins Company, Baltimore, Md.; Burns & MacEachern, Toronto, 1958. \$12.00.

Clinical Obstetrics and Gynecology, Vol. 1, No. 1. Management of Endocrine Problems, edited by A. C. Barnes; Medical Problems in Pregnancy, edited by C. J. Lund. 288 pp. Illust. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, New York, 1958.

Rotation Radiography. Shinji Takahashi, Nagoya. 163 pp. Illust. Japan Society for the Promotion of Science, 1958.

Angiophrography and Suprarenal Angiography: A Roentgenologic Study of the Normal Kidney, Expansive Renal and Suprarenal Lesions and Renal Aneurysms. Gunnar Edsman. 141 pp. Illust. Acta Radiologica, Stockholm, 1957. Sw. Kr. 30.

The Histological Distribution of Proteinase and Peptidase Activity in Solid Tumor Transplants: A Histochemical Study on the Enzymic Characteristics of the Different Tumor Cell Types. B. Sylven and H. Malmgren. 124 pp. Illust. Acta Radiologica, Stockholm, 1957. Sw. Kr. 30.

Primary Tumors of the Pelvic Bones: A Roentgen Diagnostic Study of Eighty-Three Cases. C. G. Helander and A. Lindbom. 62 pp. Illust. Acta Radiologica, Stockholm, 1957. Sw. Kr. 25.

Radiologic Examination of the Brain and Spinal Cord. E. Lindgren. 147 pp. Illust. Acta Radiologica, Stockholm, 1957. Sw. Kr. 35.

Treatment of Malignant Blood Diseases by Radioactive Phosphorus. Part I: Clinical Aspects. I. Bergström and E. Lindgren. 107 pp. Illust. Part II: Hematological Aspects. I. Bergström. 95 pp. Illust. Acta Radiologica, Stockholm, 1957. Sw. Kr. 25.—each.

Ueber das Vorkommen von Hiatushernien und Kardiainfussizienz in Verbindung mit Pleuraschwarte (The Occurrence of Hiatus Hernias and Deficiencies of Cardia in Association with Pleural Adhesions). Otsu Kuosmanen. 76 pp. Illust. Acta Radiologica, Stockholm, 1957. Sw. Kr. 20.

Mecanismes d'autoreproduction (Mechanisms of Autoreproduction). Present Concepts on Cellular Biology. Published by J. A. Thomas. 430 pp. Illust. Masson et Cie., Paris, 1957. Fr. fr. 5000.

5-Hydroxytryptamine. Proceedings of a Symposium held in London on April 1 and 2, 1957. Edited by G. P. Lewis, London. 252 pp. Illust. Symposium Publications Division, Pergamon Press, New York, 1958. \$9.50.

A History of Public Health. George Rosen, Columbia University. 551 pp. MD Publications, Inc., New York, 1958. \$5.75.

Oral Surgery. K. H. Thoma, Harvard University. 1607 pp. Illust. 3rd ed. The C. V. Mosby Company, St. Louis, Mo., 1958. \$27.50.

Actualités Biochimiques No. 20: Aspects actuels de la biochimie des acides aminés et des protéines (Progress in Biochemistry No. 20: Modern Aspects of the Biochemistry of Aminoacides and Proteins). J. T. Edsall. 156 pp. Illust. Masson et Cie, Paris, 1958. 2000 Fr. fr.

Carcinoma of the Lung. An NAPT Symposium. Report of a meeting held in London November 22, 1957, under the chairmanship of N. L. Rosby. 48 pp. Illust. National Association for the Prevention of Tuberculosis, London, 1958. 6s.

Entzündung und Bluteiweisskörper (Inflammation and Plasma Protein). H. Odenthal. 115 pp. Illust. Georg Thieme Verlag, Stuttgart; Intercontinental Medical Book Corporation, New York, 1958. \$4.65.

Glaucoma. Transactions of the Second Conference December 3, 4, and 5, 1956, Princeton, N.J. 245 pp. Illust. Edited by F. W. Newell, Chicago. The Josiah Macy, Jr. Foundation, New York, 1958. \$4.95.

Clinical Enzymology. Edited by G. J. Martin, Philadelphia. 241 pp. Little, Brown and Company, Boston and Toronto, 1958. \$6.00.

Safety Techniques for Radioactive Tracers. J. C. Bournsness, London. 67 pp. Cambridge University Press; The Macmillan Company of Canada Limited, Toronto, 1958. \$1.30.

La relaxation: Aspects théoriques et pratiques (Relaxation: Theoretical and Practical Aspects). Published by P. Aboulker and others. 98 pp. L'Expansion scientifique française, Paris, 1958.

La souche du BCG (The Strain of BCG). A. Frappier and M. Panisset. 120 pp. Institut de Microbiologie et d'Hygiène de l'Université de Montréal, 1957.

Annual Review of Medicine, Vol. 9. Edited by D. A. Ryland and W. P. Creger, Stanford University School of Medicine. 530 pp. Annual Reviews, Inc., Palo Alto, Cal., 1958.

Mental Health in Industry. A. A. McLean, Cornell University and G. C. Taylor, McGill University. 262 pp. McGraw-Hill Company of Canada Limited, Toronto, 1958. \$7.50.

Behandlung innerer Krankheiten: Richtlinien und Ratschläge für Studierende und Aerzte (Treatment of Internal Diseases: A Guide for Students and Physicians). F. Hoff, Frankfurt M. 733 pp. 8th ed. revised and enlarged. Georg Thieme Verlag, Stuttgart; Intercontinental Medical Book Corporation, New York, 1958. \$14.15.

Der Kopfschmerz: Differentialdiagnostik und Therapie für die Praxis (Headache: Differential Diagnosis and Therapy in General Practice). H. Heyck, Berlin. 301 pp. Illust. Georg Thieme Verlag, Stuttgart; Intercontinental Medical Book Corporation, New York, 1958. \$7.10.

Medizinische Roentgentechnik; II. Physikalisch-Technischer Teil 1. Grundlagen der Strahlendiagnostik und Strahlentherapie (mit Apparatekunde) (Medical Roentgenographic Technique). Edited by H. Schoen, Karlsruhe. Part II, Physical and Technical. 1. Bases of Radiographic Diagnosis and Radiographic Therapy with Description of Apparatus. E. Bunde, München. 2. Radiography. V. Loeck, München. 463 pp. Illust. 2nd ed. revised and enlarged. Georg Thieme Verlag, Stuttgart; Intercontinental Medical Book Corporation, New York, 1958. \$11.40.

Pathophysiologische Grundlagen der Chirurgie in ihrer Auswirkung auf chirurgisches Handeln (Pathophysiologic Basis of Surgery and its Effects on Surgical Procedure). Th.O. Lindenschmidt, Hamburg. 410 pp. Illust. Georg Thieme Verlag, Stuttgart; Intercontinental Medical Book Corporation, New York, 1958. \$13.35.

Wesen und Bedeutung der Enchondralen Dysostosen (Nature and Significance of Enchondral Dysostosis). H. Mau, Heidelberg. 219 pp. Illust. Georg Thieme Verlag, Stuttgart; Intercontinental Medical Book Corporation, New York, 1958. \$6.40.

Care of the Premature Infant. E. C. Lundeen and R. H. Kunstadter. 367 pp. Illust. J. B. Lippincott Company, Montreal, 1958. \$8.00.

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References: Authors should limit references to published work to the minimum necessary for guidance to readers wishing to study the subject further. They should not quote articles they have never seen, and should set out references in a numbered list at the end of the article, thus:

1. DOAKES, J.: *M. J. Kamchatka*, 1: 2, 1955, giving in order: (1) Author's name and initials in capitals. Where more than three authors are concerned in an article, only the first should be named, with *et al.* as reference to the others. (2) Cumulative Index Medicus abbreviation of journal name. (3) Volume number. (4) Page number. (5) Year.

References to books should be set out as follows:

PICKWICK, S., *Textbook of Medicine*, Jones and Jones, London, 1st ed., p. 30, 1955.

Illustrations: Photographs should be glossy prints, unmounted and untrimmed, preferably not larger than 10 by 8 inches. Colour work can be published only at the author's expense. Magnification of photomicrographs must always be given. Photographs must not be written on or typed on. Identification can be made by pasting an identifying legend on the back. Patients must not be recognizable in illustrations, unless the written consent of the subject to publication has been obtained. Graphs and diagrams should be drawn in india ink on suitable white paper. Legends to all illustrations should be typed separately from the text of the article. Illustrations should not be rolled or folded.

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AVAILABLE FOR LOCUM, for several months from July 1958, in the Maritimes. Assistantship also desired. L.M.C.C. Previous experience in general practice. Reply to Box 746, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

ENGLISH GRADUATE (1950) London, diplomas in obstetrics and anaesthetics—Royal College of Surgeons. Age 31 years, single. Keen anaesthetist, L.M.C.C., seeks work in general practice anywhere in Canada. Available immediately. Reply to Box 771, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

EXPERIENCED GENERAL PRACTITIONER, M.D. Switzerland, L.M.C.C. 1954, Canadian citizen, married, age 35 years, registered in Manitoba, desires position in general practice. Very good knowledge of French, Polish, Czech and German. Reply to Box 772, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

SURGEON, Canadian graduate, certified, fellowship eligible, Canadian and American trained, desires association with surgeon, clinic or group. Age 30 years, married, good health. Reply to Box 775, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

M.R.C.O.G., age 32 years, Irish graduate, fellowship eligible, desires opening in Prairie Provinces. Available September 1958. Obstetrical and gynaecological work preferred. Reply to Box 779, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

SIX MONTH LOCUM in Canada, sought by English physician now practising in Jamaica. Would be available in six to eight weeks. Personal history—J. C. Stephens, M.R.C.S., L.R.C.P., L.M.S.S.A., age 40 years; qualified from London hospital, Whitechapel, was house surgeon there. Thirteen years in practice includes five years as surgeon lieutenant in the Royal Navy, one year general practice in England and seven years general practice in Jamaica. Write to Box 766, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario, or Dr. J. C. Stephens, Christiana, Jamaica, B.W.I.

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(Continued on page 32)

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MEDICAL NEWS in Brief

(Continued from page 128)

INTERNATIONAL CONGRESS OF BALNEOLOGY

The Czechoslovak Society of Physiotherapy is holding an International Congress of Balneology in Marienbad from September 8-13, 1958. The main themes are: (1) Conservative and balneotherapy in urology; (2) Thermoregulation in psychiatrics and balneology.

Papers will be read by participants from Bulgaria, France, West and East Germany, Hungary, Poland, the Soviet Union, Sweden and Czechoslovakia.

The official languages of the Congress are English, French, Russian, German, Czech and Slovak. There will be simultaneous interpretation to and from the official languages. The scientific program will be complemented by excursions and cultural and social events. A special program will be provided for family members of participants.

Application and inquiries should be addressed to the Secretary of the International Congress of Balneology, Reznická 5, Prague 2, Czechoslovakia.

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Applications for certification (American Board of Obstetrics and Gynecology), new and reopened, Part I, and requests for re-examination, Part II, are now being accepted. All candidates are urged to make such application at the earliest possible date. Deadline date for receipt of applications is September 1, 1958. No applications can be accepted after that date. It should be noted by prospective candidates that the deadline date will be August 1, in 1959.

Candidates are requested to write to the office of the Secretary for a current Bulletin if they have not done so, in order that they may be well informed as to the present requirements. Application fees (\$35.00), photographs, and lists of hospital admissions must accompany all applications.

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And love to hear this greeting fall
In friendly cadences, the call—'Lo
Doc!

These dear expressions of esteem
Show things are better than they
seem.

It's sweet to hear a person greet
His doctor when they chance to
meet—Hi Doc!

And what more pleasant to the ear
Than some child's voice a-ringing
clear—My Doc!

It brings to mind the better life,
Relieved of turmoil, pain and
strife.

There's more than monetary gain,
In giving sweet relief from pain—
Aye Doc!

It's comforting to be a friend
Of some poor being to the end—
Bye Doc!

What can be nicer than to think
We've played our part to life's
dark brink.

It's wonderful to comfort give,
And help some fellow soul to live
—Oh Doc!

And what could give one greater
peace
Than giving joy and sweet sur-
cease—So Doc!

Continue giving peace of mind,
By being friendly, good and kind.

The sweet relationship retain
Of doctor-patient, what more
gain?—Eh Doc!

Let none too socialistic be
But take our time to wait and see
—Say Doc!

There's more in this than meets
the eye:
There's past and present, bye and
bye.

This word like mother seems to
chime
This word resplendent of our
time—Just Doc!

STERLING LeR. SPICER, M.D.

PULMONARY CIRRHOSIS

The condition much more com-
monly known as pulmonary fibrosis
or the Hamman-Rich syndrome
was originally described by Rind-
fleisch in 1897, and later by other
writers. They preferred the name
of pulmonary cirrhosis because of
its resemblance to cirrhosis of the
liver.

The disease in its pure form
has been observed by Grosse-Brock-
hoff (*Deutsche med. Wchnschr.*,
83: 677, 1958) in some 40 cases.
It does not show any sex predilec-
tion and can occur in an acute or

chronic form. The clinical and
pathological findings in four cases
are given by this author, who then
discusses the disease and its re-
semblance to the collagen diseases
such as disseminated lupus and
scleroderma. The difficulties of
clinical diagnosis are stressed and
the differential diagnosis is given
in some detail. The author suggests
that just as cirrhosis of the liver
can at times result from hepatitis,
so it is conceivable that pulmonary
cirrhosis could on rare occasions
follow virus pneumonia. Inhalations
of toxic dusts and other ma-

(Continued on page 38)

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MEDICAL NEWS in brief
(Continued from page 37)

terials such as paraffin have to be kept in mind as etiologic factors.

Treatment is essentially symptomatic and cannot prevent the progressive downhill course. ACTH and cortisone have produced temporary improvement, but the treatment is not free from danger, especially on withdrawal of the drugs.

**HÆMORRHAGIC DIATHESIS
RELATED TO
QUINIDINE THERAPY**

Hunt *et al.* (*Proc. Staff Meet. Mayo Clin.*, 33: 87, 1958) reported four cases in which purpuric manifestations developed as an apparent consequence of idiosyncrasy to quinidine. These and the growing number of other cases reported in the literature suggest that the incidence of thrombocytopenic purpura related to quinidine therapy is much higher than once thought. Purpura may occur in patients not known to have been exposed previously to quinidine. The onset of symptoms may be gradual or sudden and anaphylactoid in nature. Findings are those of acute thrombocytopenic purpura. Recurrent hæmorrhagic manifestations with increased suddenness of onset and severity of symptoms may occur as a result of repeated exposures to quinidine therapy. Although not necessarily related to the total dose, symptoms persist and become more severe when quinidine therapy is continued. Documentation of a hypersensitivity response to a test dose of quinidine may be hazardous to the patient. When quinidine therapy is discontinued, the prognosis for recovery is good.

**THE SYNDROME OF
OCCLUSION OF THE
ANTERIOR SPINAL
ARTERY**

The clinical picture of occlusion of the anterior spinal artery is illustrated by a review of 10 cases by Peterman *et al.* (*Proc. Staff Meet. Mayo Clin.*, 33: 31, 1958). In all cases the evidence indicated interruption of the function of the anterior two-thirds of the spinal cord, with impaired sensation of pain and temperature below the level of the lesion, and involvement of the descending motor

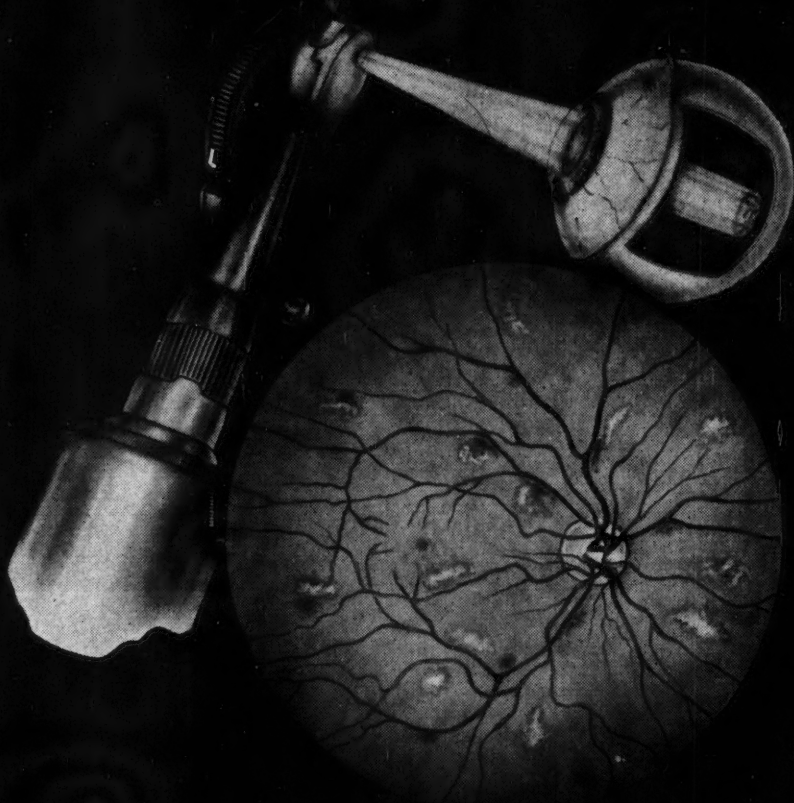
pathways. Function of the posterior column was normal. All patients in this group showed early improvement in muscle strength, with varying degrees of sensory recovery, although each continued to have some neurologic deficit.

The sudden onset of paraplegia or quadriplegia and dissociated sensory changes indicating a lesion of the anterior two-thirds of the spinal cord suggest occlusion of the anterior spinal artery or one

of its vessels of origin. Such a vascular lesion might be caused by syphilis, arteriosclerosis, the arteritides, embolism or hypercoagulability. Mechanical compression of the spinal cord by tumour, vertebral fracture, protrusion of an intervertebral disc, or contusion may produce a similar clinical picture. In addition to the above-named conditions, sudden hypotension or coarctation of the aorta during a surgical procedure might lead to

in **diabetic retinopathy**

and other eye disorders
involving capillary fault



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insufficiency in the anterior spinal artery. The treatment of occlusion of the anterior spinal artery includes general supportive measures and an intensive program of physical therapy. In view of the increasing use of anticoagulant agents in clinical medicine, it seems worth while to evaluate anticoagulant therapy for this condition if the diagnosis can be established during the prodromal or early stages.

CORONARY ARTERIOVENOUS FISTULA

The diagnosis of coronary arteriovenous fistula can be made with certainty and precision during life. It may be suspected on the basis of a continuous murmur resembling that of patent ductus arteriosus but atypical in location. Catheterization of the heart may be diagnostic and can be expected

to reveal the presence and volume of a left-to-right shunt. It also might prove to confuse the diagnosis by suggesting a more common cause of such a shunt. Angiocardiography is capable of diagnostic findings. Coronary arteriography, though yet to be used in coronary arteriovenous fistula, probably offers the best means of obtaining a precise anatomic diagnosis during life. The prognosis in this lesion varies widely in keeping with the varying anatomic and functional abnormalities that may exist. In some instances there has been long life with apparent freedom from symptoms; in others heart failure due to the demand for increased cardiac output or associated hypertensive disease has caused death of patients with this lesion. Surgical ligation of the artery or arteries carrying blood to the fistula should be attempted if there is evidence of progressive disease. In a given case, surgery may be curative or it may be impossible, depending upon the pathologic anatomy that is present. These facts are contained in a report by Steinberg (*Circulation*, 17: 372, 1958) on one case of his own and 21 cases which he gathered from the literature.

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1. Ralph, F. T.: Eye, Ear, Nose and Throat Monthly, Feb. 1958.

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CLINICAL SYNDROMES DUE TO ADENOVIRUSES AND ECHO VIRUSES

The results of investigation of virus diseases are no longer purely of academic interest; laboratory tests for these can be of practical aid to the attending physician in establishing a diagnosis. There is probably a genuine increase in the incidence of virus disease, and the role of many new viruses in clinical syndromes has been established. In *Pediatric Clinics of North America* for May 1958, Mairin Clarke, Ormsby and Rhodes of Toronto describe the clinical syndromes caused by the adenoviruses and the group of ECHO or "orphan" viruses. The adenoviruses are causal agents of acute respiratory tract disease, pharyngoconjunctival fever, and some cases of keratoconjunctivitis. On the other hand, ECHO viruses, particularly types 4, 6 and 9, cause seasonal outbreaks of aseptic meningitis.

The authors describe aseptic meningitis associated with a maculo-papular rash as observed in

(Continued on page 40)

MEDICAL NEWS in brief (Continued from page 39)

Canadian epidemics and described in this Journal. In addition they mention further cases due to ECHO virus, type 9, so far unpublished.

SMOKING HABITS IN A RURAL COMMUNITY

Bronchial carcinoma is three times as frequent in urban cantons as in the rural cantons of Switzerland, according to Gsell (*Schweiz. med. Wchnschr.*, 88: 349, 1958). His inquiry into the smoking habits

of the population in a rural district is based on detailed questioning of 1635 adult persons. It shows that the proportion of non-smokers was considerably higher in this population than in Swiss towns. The rural smokers began smoking later than those in the cities, but otherwise showed no important differences from the city dwellers. As air pollution of Swiss cities is insignificant when compared with industrial areas in larger countries, it appears that the chief reason for the more than threefold increase in the frequency of cancer in urban cantons is the greater number of people who smoke.



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NATIONAL HEALTH WEEK

The Health League of Canada has prepared a brochure which contains a report of the 14th Annual National Health Week, observed February 2-8, 1958. The brochure contains a number of supporting statements from persons and organizations, including the Canadian Medical Association, as well as extracts from statements submitted by voluntary health organizations for press releases. These are followed by a series of reports on the 14th National Health Week itself and on certain ancillary campaigns. The director of the Health League, Dr. Gordon Bates, states that plans are already being laid for National Health Week 1959, which will be observed from February 1-7.

UNEXPLAINED DEATH FROM EXCHANGE TRANSFUSION

From time to time, it is pointed out that exchange transfusion for the treatment of hæmolytic disease of the newborn may be associated with an unexpected fatality. Taylor, Grisdale and Stewart of Edmonton, Alberta (*J. Pediat.*, 52: 694, 1958), report two instances of this. In the first case an infant was receiving its third exchange transfusion when cardiac slowing progressed to ventricular fibrillation and complete cardiac arrest. The infant was resuscitated with intracardiac adrenaline and artificial respiration, but died 14 hours later. In the second case, selected from 50 cases in which electrocardiography was performed during exchange transfusion, the heart rate slowed although the general condition was satisfactory, and the ECG showed marked sinus bradycardia and occasional ectopic beats. In spite of calcium injection the arrhythmia persisted throughout the exchange. Normal rhythm was then restored, and the subsequent progress was uneventful. Data available do not permit elucidation of a common cause for change in cardiac function in such cases. Possible factors, singly or in combination, may be involved—hyperpotassæmia, hypocalcæmia, hypothermia, acidosis, prematurity, and the disease processes of hæmolytic disease.

(Continued on page 42)

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MEDICAL NEWS in brief
(Continued from page 40)

**LEUKOPENIA ASSOCIATED
WITH RISTOCETIN
(SPONTIN)
ADMINISTRATION**

The ristocetins A and B are new antibiotics obtained from a *Nocardia* species. A mixture known as Spontin was given to a 14-year-old boy with an infection in the left lateral cervical and parotid area, which responded with prompt fall in temperature and rapid disap-

pearance of the inflammatory mass. Leukopenia developed on the 12th day of ristocetin administration and persisted for over a week. Two weeks after withdrawal of the drug, the white cell count was down to 5600.

Ristocetin was also given to a 64-year-old man with septicæmia after the response to penicillin and erythromycin with novobiocin had been deemed not quite satisfactory. There was good response to ristocetin therapy (the best obtained up to that time), but on the 10th

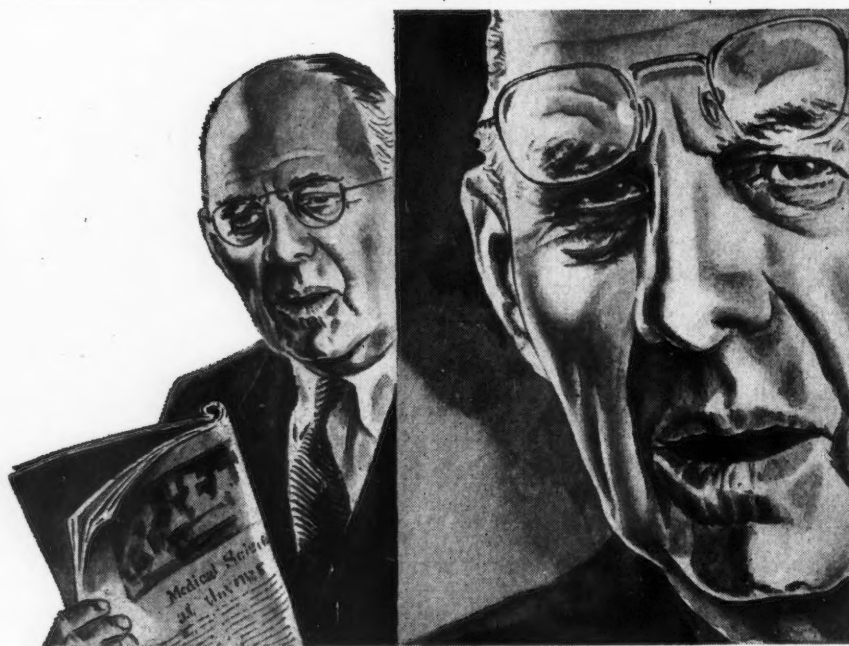
day of therapy diarrhoea developed and ristocetin was discontinued. Two days later leukopenia was noted, but in spite of it the patient continued to improve on penicillin therapy; the white cell count returned to normal at the time of the patient's discharge 17 days after discontinuation of ristocetin.—Newton and Ward: *J. A. M. A.*, 166: 1956, 1958.

**ADRENAL CORTICAL
FUNCTION IN LUNG
CANCER**

It has been suggested that in bronchial carcinoma metastasis takes place to the adrenals in 25 to 44% of cases. The question arises therefore whether a study of adrenal cortical function during life might aid in case selection for operation. Langheim of Hamburg (*Zentralbl. Chirg.*, 82: 2139, 1957) investigated adrenal cortical function with particular reference to 17-ketosteroid excretion in 33 patients with a primary bronchial carcinoma. In five cases there was a hypofunction and in four a hyperfunction of the adrenal cortex. In comparison, he found three cases of hyperfunction among 21 tuberculous patients who had received chemotherapy. The author considers that in the cases of hypofunction there was probably a general state of exhaustion, and in a certain number massive metastases in one or both adrenals. The hyperfunction might be due either to a peripheral or central stimulus. This study did not settle the question of determining operability by adrenal cortical function studies, but it was interesting to note that where deviations from the normal were slight the prognosis seemed to be better.

**TRANQUILLIZERS IN
PULMONARY
TUBERCULOSIS**

In view of the generally accepted relationship between emotional disturbances and activity of pulmonary tuberculosis, the use of ataractic drugs as an adjunct in treatment of this disease would seem logical. Last year, Shubin and his associates from the Philadelphia General Hospital reported use of chlorpromazine and stated that it was effective in over 80% of tuberculous cases in reducing emotional stress. They now report (*Antibiotic* (Continued on page 45)



"Doctors can't help shingles?"

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MEDICAL NEWS in brief
(Continued from page 42)

Med., 5: 305, 1958) a similar study with prochlorperazine (Compazine) as an ataractic agent in tuberculosis. A study of a group of 61 patients with active pulmonary tuberculosis under treatment in hospital suggested that addition of prochlorperazine to the general antituberculous regimen was helpful not only in adjusting the patient to a lengthy and monotonous regimen and reducing anxiety and fear, but also as an antiemetic. Its effectiveness in eliminating the nausea and vomiting associated with administration of para-aminosalicylic acid without any serious side effects was alone sufficient to make it useful.

NEW CIVIL DEFENCE PUBLICATIONS

Two new civil defence publications have recently been released. The first is known as "Primary Treatment Services" and is the first section of the new civil defence health services manual to be issued. It is a 43-page booklet describing the organization of civil defence health services at provincial and community levels. The presentation is clear and concise and should appeal to all those interested in this subject.

The second one is a folder entitled "Your Evacuation Pack." It gives a list of the essential supplies and equipment to carry in case of rapid evacuation of a target area. Sufficient food and water for seven days is recommended. A second list of non-essential but desirable equipment is also included.

Both of these are produced by the Department of National Health and Welfare and are available from the local director or provincial coordinator of civil defence.

A HAZARD OF ROCK 'N ROLL

The tribal rite of rock and roll has been blamed for many things, but a French gynaecologist from Lille (*Bull. Soc. gyn. et obst. franç.*, 9: 363, 1957) records a hitherto unreported hazard. A healthy 21-year-old girl while engaged in a rock and roll session suddenly felt an incapacitating pain in the lower abdomen. Laparotomy on the next

day revealed a torsion of an ovarian cyst with early hæmorrhagic infarction.

A PIONEER IN DRUG STANDARDIZATION

One hundred years ago, in 1858, Dr. Edward Robinson Squibb opened a small laboratory in Brooklyn for the production of pure and standardized drugs. Dr. Squibb was a U.S. naval surgeon

who in 1852, impressed with the unreliability of drugs, persuaded Congress to appropriate funds for the establishment of a small naval laboratory for drug research. The first product was a safe, uniform, controllable ether for anaesthesia, and as a guarantee of strength and purity of his product he personally signed the label of every batch sent out or tested. His private laboratory begun in 1858 was the forerunner of the present house of E. R. Squibb.

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